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**Traffic Impact Analysis for Freeway Interchanges, prepared by
Austin-Foust Associates, Inc., January 9, 2007**

DRAFT

NORTHLAKE VTTM 51852
Traffic Impact Analysis for Freeway Interchanges

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NORTHLAKE VTTM 51852

Traffic Impact Analysis for Freeway Interchanges

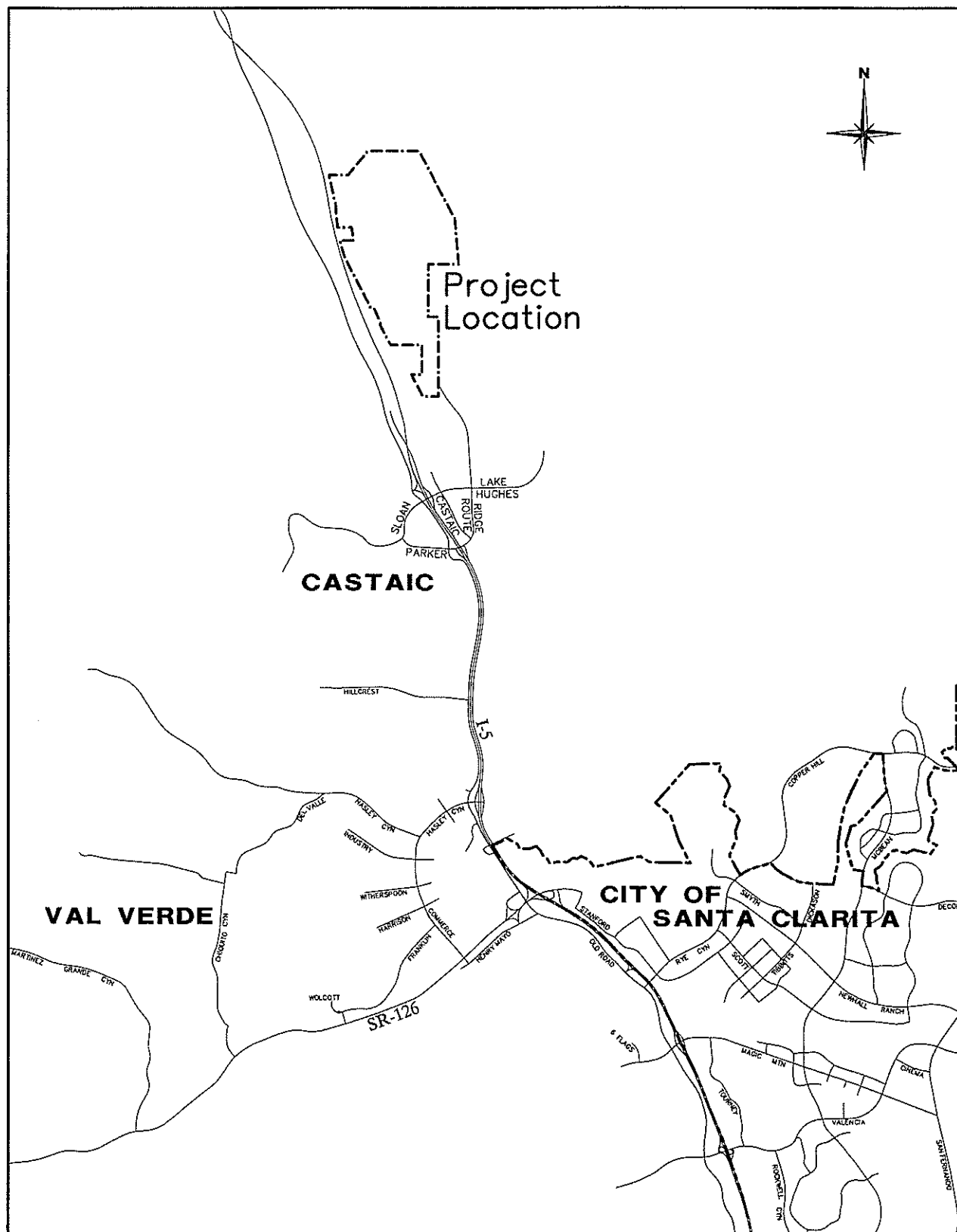
1.0 BACKGROUND

This report presents the results of the revised impact analysis for the proposed Northlake Phase 1 VTTM 51852 development for locations that are part of the State highway system. A comprehensive traffic impact analysis was prepared for the project's Environmental Impact Report (EIR) in December 2005. That analysis identified project impacts at several off-site locations including intersections located at the I-5 freeway interchanges at Parker Road and Lake Hughes Road. Caltrans has jurisdictional authority over the interchanges and, at the request of Caltrans, the impact analysis and resulting mitigation measures for the interchange locations have been re-evaluated.

Northlake is located in the Castaic community, east of Interstate 5 (I-5) and north of the Lake Hughes Road interchange. Figure 1 illustrates the general location of the project site. A Specific Plan was approved in 1991 for a development consisting of nearly 4,000 residential dwelling units. VTTM 51852 represents one portion of this development area and consists of 1,051 single-family detached units and 645 condominium units. Figure 2 illustrates the northern portion of the proposed site plan, which includes the residential development areas. The southern portion of VTTM 51852 is illustrated in Figure 3, which shows the extension of existing Ridge Route Road into the project area.

The project site encompasses 804 acres located in the Northlake Specific Plan area of unincorporated Los Angeles County, immediately north of the existing community of Castaic. It is currently vacant with no previous uses at this location. The proposed project is consistent with the Specific Plan designations for the area.

Based on established trip rates published by the Institute of Transportation Engineers (ITE) and the County of Los Angeles, the residential units of VTTM 51852 are forecast to generate approximately 15,200 ADT with approximately 1,140 tripends in the AM peak hour (900 outbound) and approximately 1,530 tripends in the PM peak hour (980 inbound), as shown in Table 1.



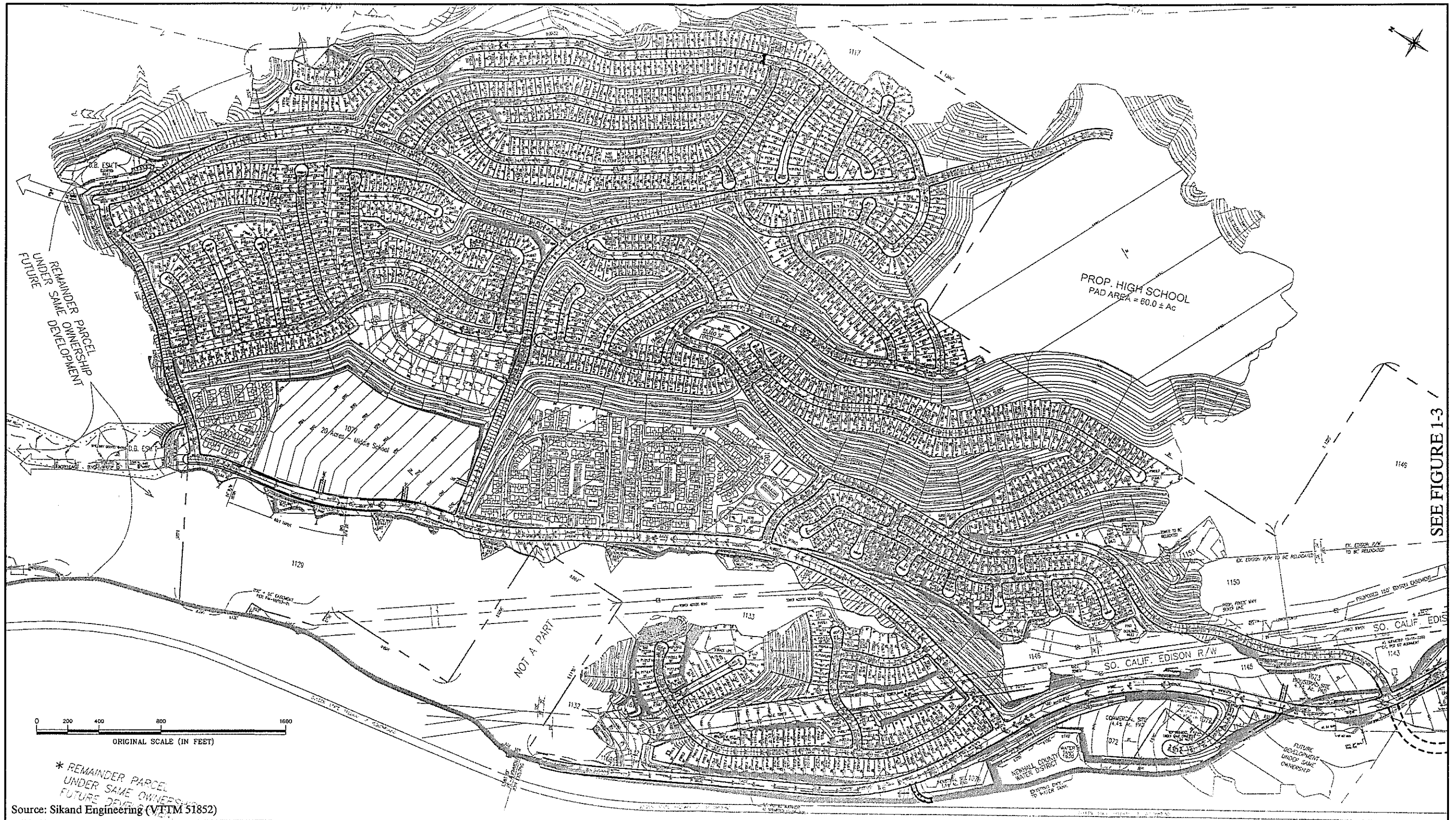


Figure 2
PROJECT SITE PLAN
(NORTH)

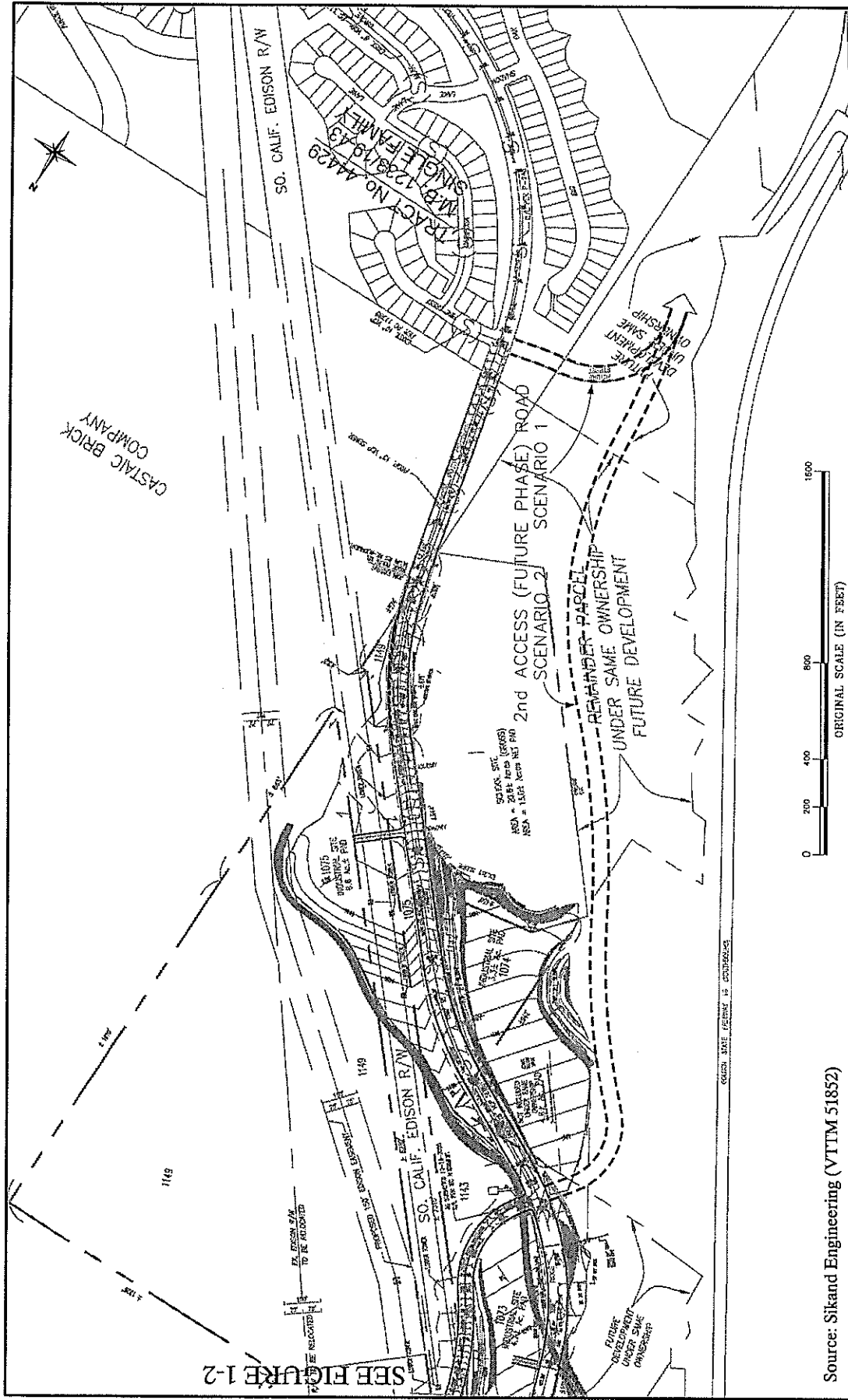


Figure 3
PROJECT SITE PLAN
(SOUTH)

Table 1: Land Use and Trip Generation Summary - Proposed Project

Land Use	Amount	AM Peak Hour			PM Peak Hour			ADT
		In	Out	Total	In	Out	Total	
TRIP GENERATION								
Single Family Residential	1,053 DU	200	590	790	674	390	1,064	10,077
Condominium/Townhome	645 DU	39	310	349	303	168	471	5,160
RESIDENTIAL TOTAL	1,698 DU	239	900	1,139	977	558	1,535	15,237
Middle (Jr. High) School	1,200 STU	348	288	636	96	84	180	1,944
TRIP RATES								
Single Family Residential ¹	DU	.19	.56	.75	.64	.37	1.01	9.57
Condominium/Townhome ²	DU	.06	.48	.54	.47	.26	.73	8.00
Middle (Jr. High) School ³	STU	.29	.24	.53	.08	.07	.15	1.62
Trip Rate Sources: ¹ Institute of Transportation Engineers (ITE) Category 210 (Single-Family Detached Housing), 7 th Edition ² Los Angeles County Traffic Impact Analysis Guidelines ³ Institute of Transportation Engineers (ITE) Category 522 (Middle School/Jr. High School), 7 th Edition								
Notes: DU = Dwelling Units; STU = Student Trip generation is rounded at each individual traffic zone.								

The project site includes a portion of the existing Ridge Route Road. The existing roadway system of the nearby Castaic community is illustrated in Figure 4 in the form of mid-block lanes, as well as intersection lane configurations and control types for the major intersections.

The I-5 freeway provides regional access to the Los Angeles area to the south and to Kern County to the north. It currently consists of four lanes in each direction. In the Castaic area, interchanges exist at Lake Hughes Road and at Parker/Ridge Route Road. At the Lake Hughes Road interchange, direct ramps exist for the northbound direction, and hook ramps to and from The Old Road for the southbound direction. At the Parker/Ridge Route interchange, ramps exist for movements to and from the south only.

Peak hour turning movement volumes for each major intersection can be found in Figure 5. The traffic counts were collected in May and November 2003 for the EIR Traffic Study.

2.0 STUDY AREA

The study area used for this analysis represents the intersections at the Parker Road and Lake Hughes Road interchanges. Traffic flow through the adjacent County intersections was also taken into account as part of the operational analysis of the interchange locations. These locations were part of the EIR Traffic Analysis prepared in December of 2005.

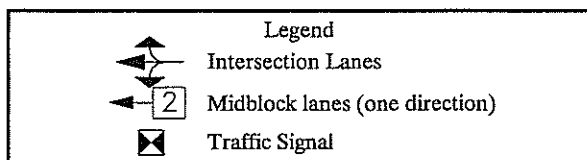
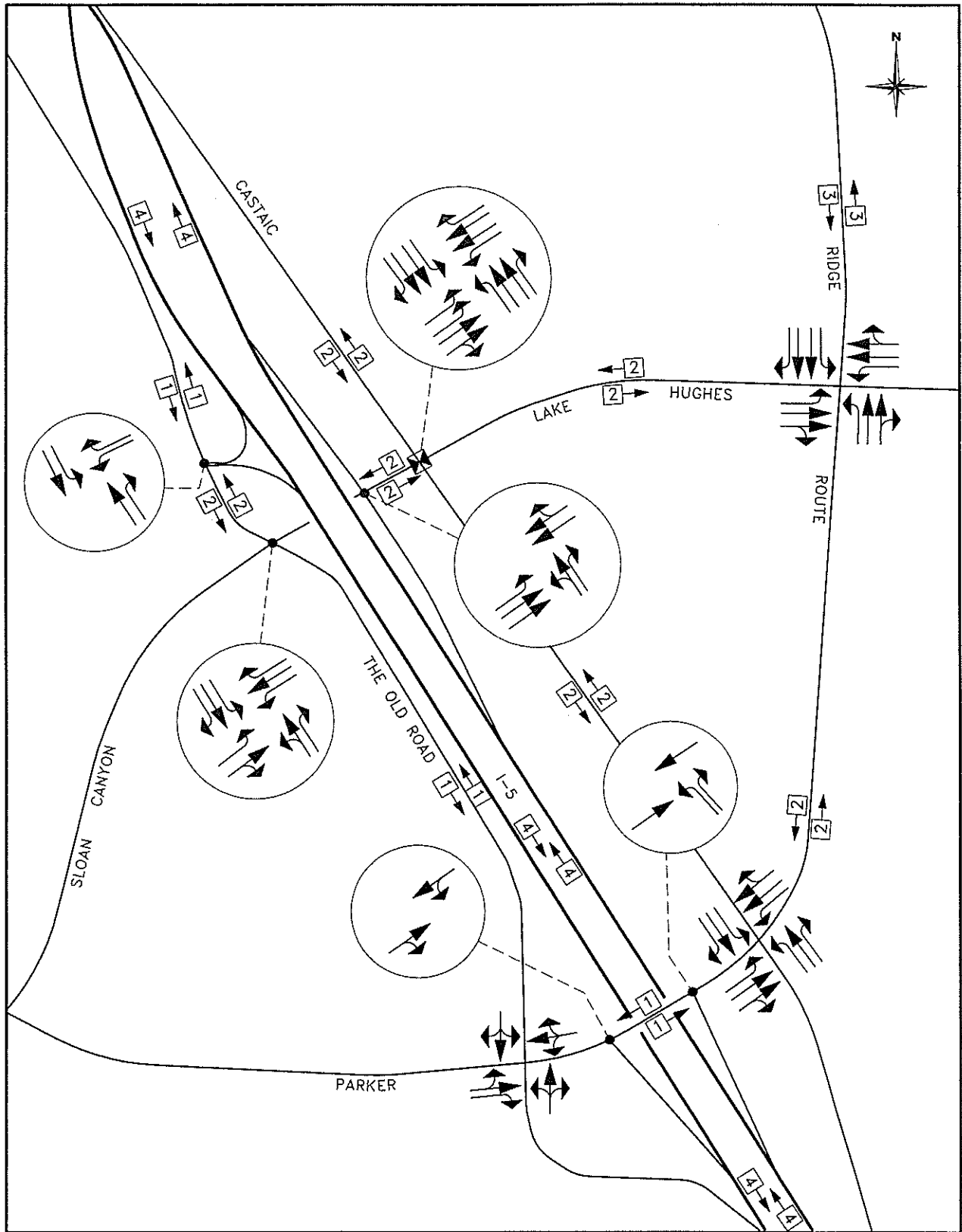
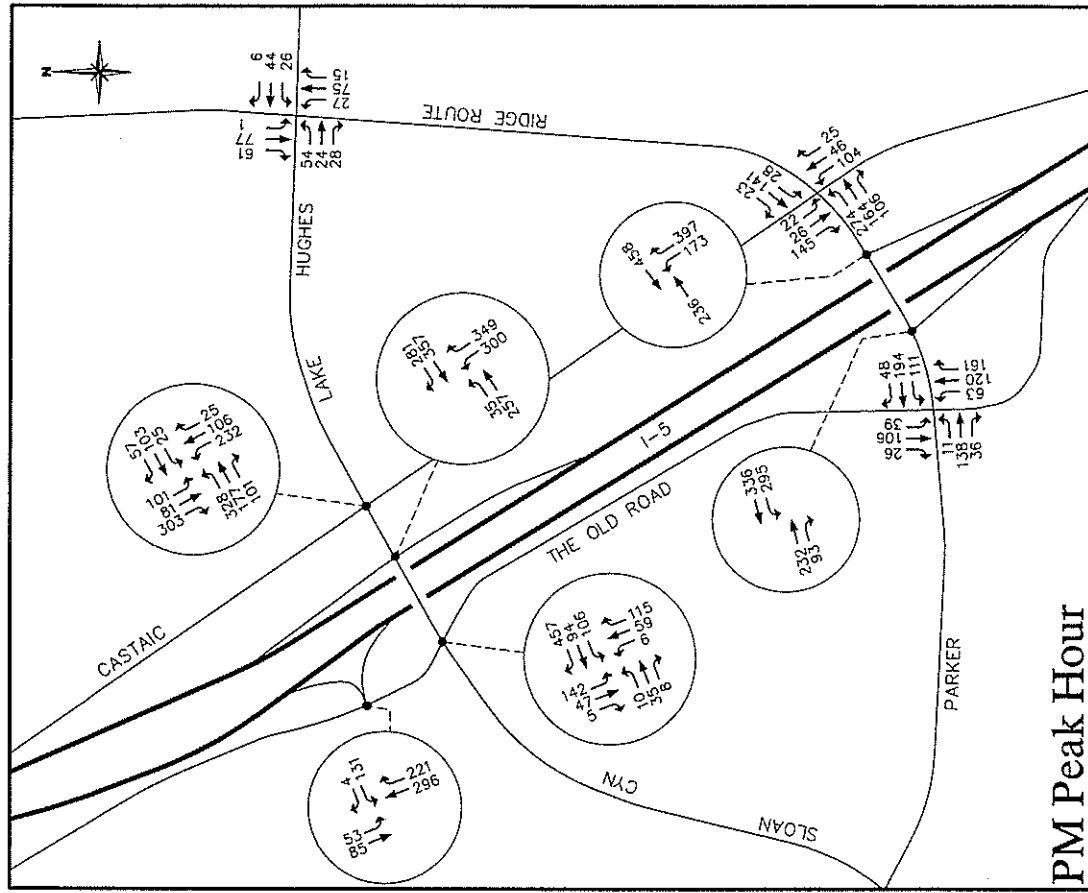
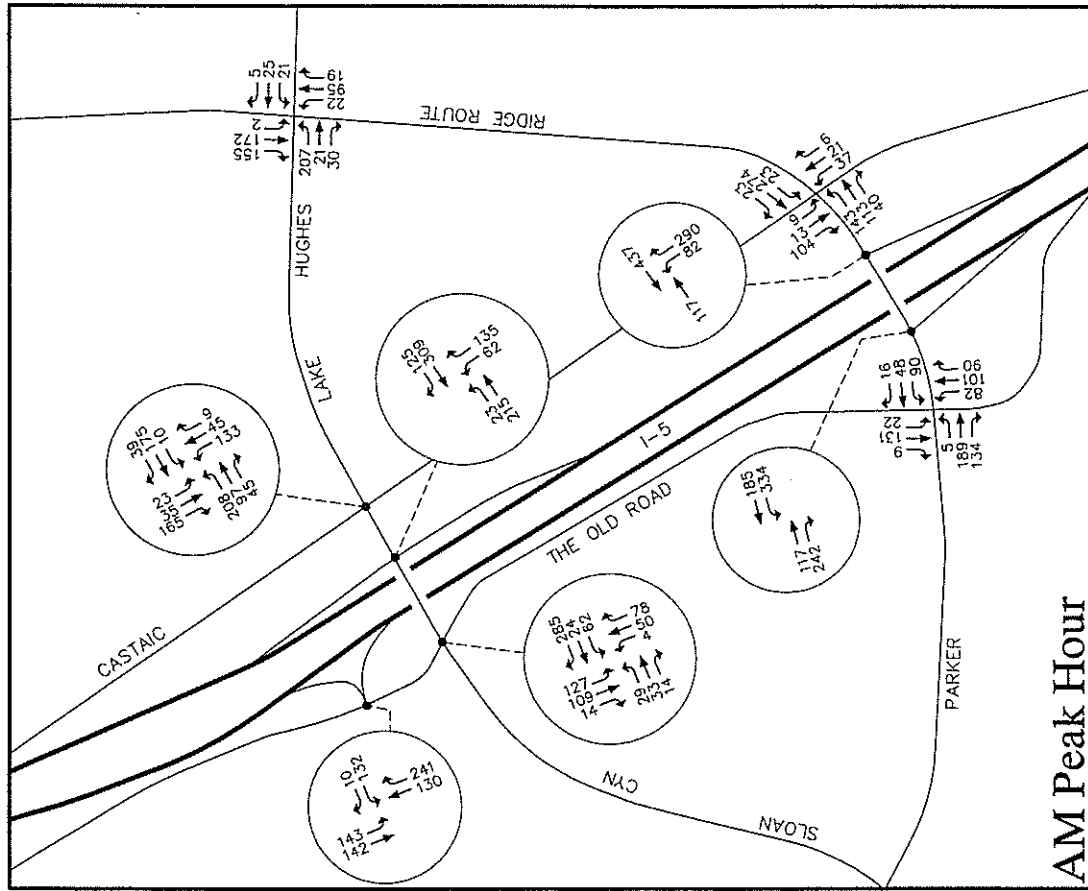


Figure 4
EXISTING ROADWAY NETWORK (2003)



Sources: Draft Northlake VTTM 51852 Traffic Impact Analysis, December 2005

Figure 5

3.0 METHODOLOGY

This revised impact analysis evaluates the proposed project in accordance with the guidelines set forth by Caltrans. The project is evaluated using forecasts corresponding to approximately 20 years after the anticipated date of construction, which for this analysis results in a horizon year of 2030.

4.0 IMPACT ANALYSIS

An intersection delay and level of service (LOS) analysis is prepared to determine if the proposed project causes a significant impact. Average vehicle delay in seconds is calculated with and without project traffic using the Synchro traffic operations modeling software.

Caltrans objective is to maintain LOS C or better but Caltrans acknowledges that LOS C is not always feasible in an urban environment. For this analysis, project mitigation is proposed when with-project conditions exceed LOS D in order to achieve with-project conditions that are equivalent to or better than no-project conditions.

The project is evaluated for impacts using the Caltrans specified methodology which is based on forecasts corresponding to approximately 20 years after the anticipated date of construction, which for this analysis results in a horizon year of 2030. This horizon year is then evaluated for conditions with and without the project in order to evaluate any impacts the project creates within the study area. Illustrations of turning movement volumes for 2030 conditions with and without project traffic are provided in Figures 6 and 7, respectively.

Table 2 summarizes the average vehicle delays and LOS for 2030 conditions, both with and without the project. As shown, the project causes a significant impact at the following intersections:

- Old Road & I-5 SB Ramps (Lake Hughes interchange)
- I-5 NB Ramps & Lake Hughes
- I-5 SB On-Ramp & Parker
- I-5 NB Off-Ramp & Parker/Ridge Route

Mitigation that addresses the significant impacts is provided in Section 5.0.

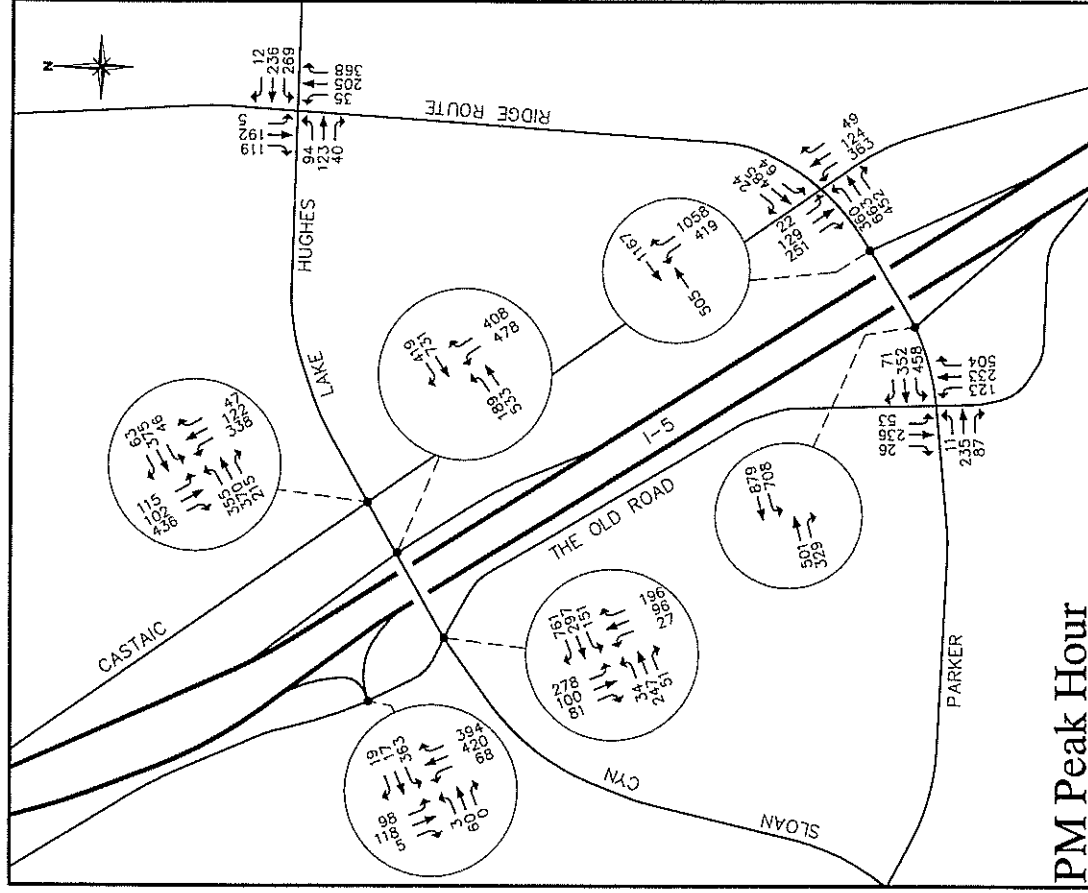
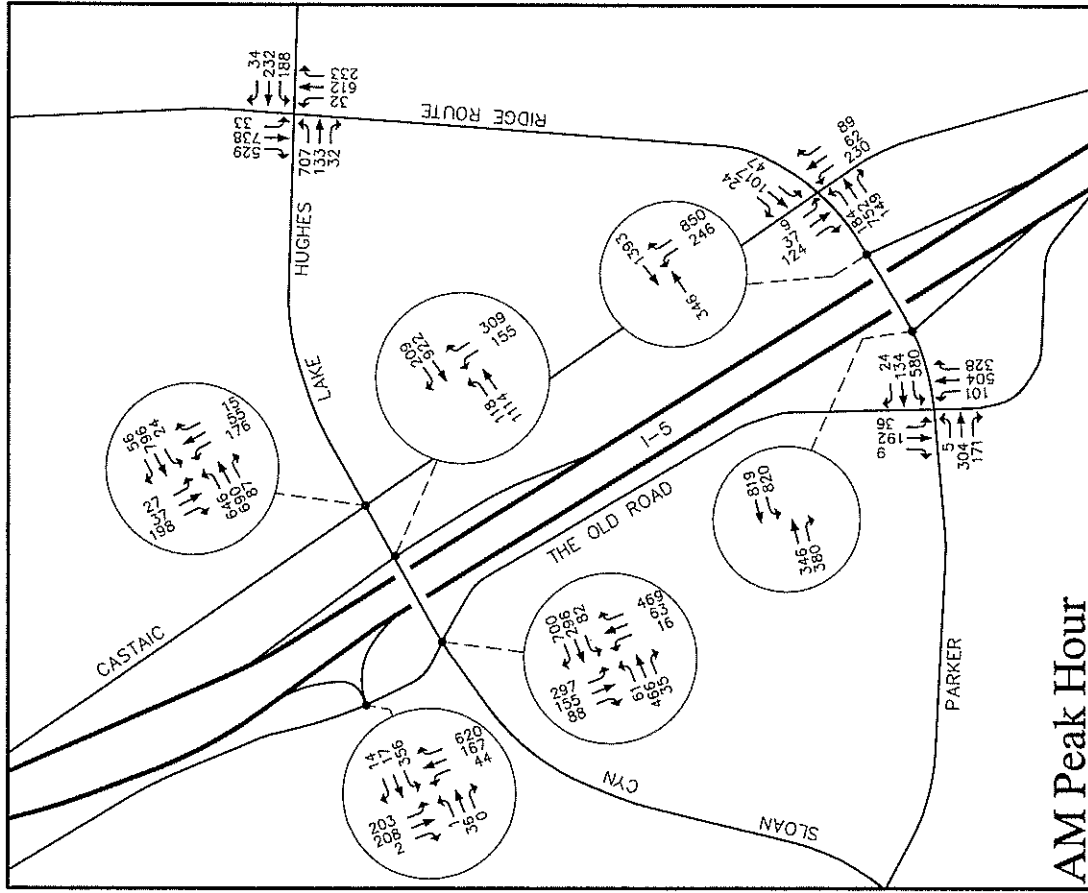
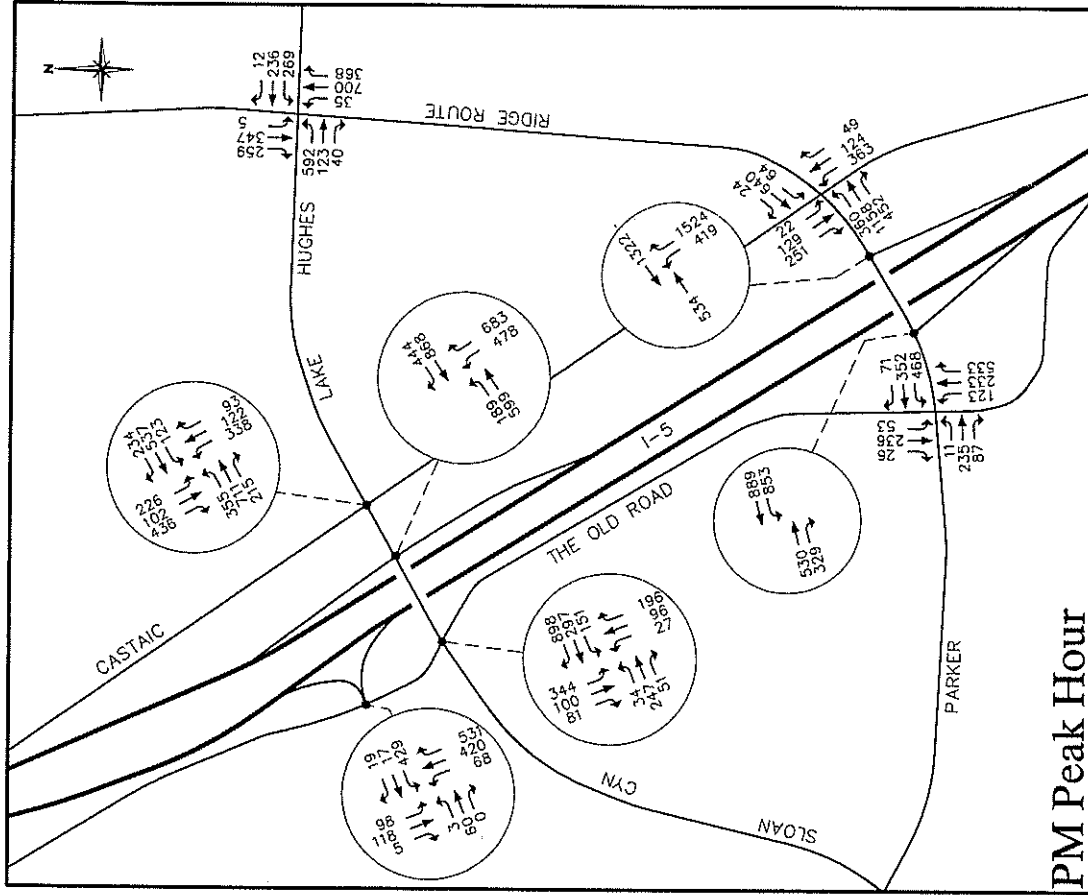
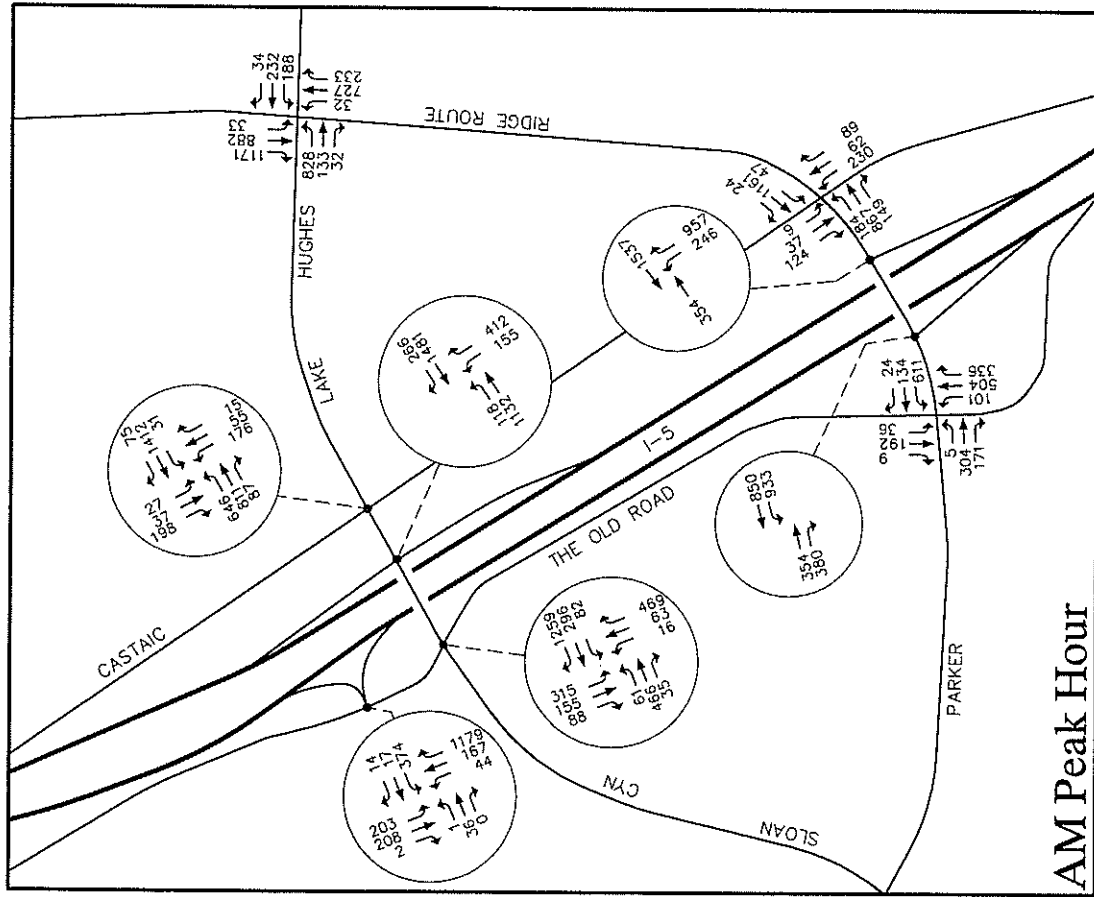


Figure 6
 2030 PEAK HOUR WITHOUT NORTHLAKE



Legend
← xx Turning Movement Volume

Figure 7

2030 PEAK HOUR WITH NORTHLAKE PHASE 1

Table 2: Average Vehicle Delay and LOS Summary - 2030 Conditions

Intersection	2030 No Project				2030 With Northlake Phase 1				Increase	
	AM		PM		AM		PM		AM	PM
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	Delay
1. Old Road & I-5 SB Ramps	666	F	251.9	F	>1,000	F	444.9	F	*	193.0*
3. I-5 NB Ramps & Lake Hughes	>1,000	F	>1,000	F	>1,000	F	>1,000	F	*	*
7. I-5 SB On-Ramp & Parker	58.8	F	51.9	F	115.9	F	137.6	F	57.1*	85.7*
8. I-5 NB Off-Ramp & Parker/Ridge Route	>1,000	F	>1,000	F	>1,000	F	>1,000	F	*	*
<p>*Significant Impact. Delay = Average Delay/Vehicle (seconds) Intersection numbering refers to the Northlake VTTM 51852 Traffic Impact Analysis (December 2005) numbering system</p> <p>Level of service ranges (based on average vehicle delay) for two-way stop-controlled intersections:</p> <p>0-10 A > 10-15 B > 15-25 C > 25-35 D > 35-50 E > 50 F</p>										

5.0 MITIGATION

In the December 2005 traffic study, two intersections were identified as being significantly impacted by the proposed project and seven additional intersections were identified as being significantly impacted by the cumulative effect of project plus related project traffic. Mitigation for these impacts was proposed within the traffic study. At the request of the Los Angeles County Department of Public Works, Caltrans was consulted for the acceptance of the proposed freeway interchange mitigation measures as Caltrans has the jurisdictional authority over the locations due to their being a part of the State highway system. After Caltrans review, some aspects of the mitigation were determined to be undesirable and new mitigation measures were requested.

Table 3 summarizes the new proposed mitigation measures that are the result of this revised analysis. Table 4 summarizes the average vehicle delays and LOS for 2030 with project conditions, with and without the proposed mitigation, and shows that the project impacts are effectively mitigated by the proposed improvements. An illustration of the proposed improvements is provided in Figure 8.

Table 3: Mitigation Summary for Interchange Locations

Location	Project Impacts
1. I-5 Freeway Southbound Ramps at the Old Road (Lake Hughes Interchange)	1) East Approach: Restripe off-ramp to provide a second westbound left-turn lane (for one left-turn lane and one shared left/through/right-turn lane) 2) South Leg: Restripe southbound direction to accommodate two left-turn lanes on the East approach 3) Install traffic signal (when warranted)
3. I-5 Freeway Northbound Ramps at Lake Hughes Road	1) East Approach: Restripe roadway to provide a separate westbound right-turn lane (for two through lanes and one right-turn lane) 2) Install traffic signal (when warranted)
7. I-5 Freeway Southbound On-Ramp at Parker Road	1) West Approach: Widen roadway to provide a separate eastbound right-turn lane (for one through lane and one right-turn lane)
8. I-5 Freeway Northbound Off-Ramp at Parker/Ridge Route Road	1) South Approach: Widen off-ramp to provide a second northbound right-turn lane (for 1 left-turn lane and two right-turn lanes) 2) Install traffic signal (when warranted)

Table 4: Average Vehicle Delay and LOS Summary - 2030 Mitigation Conditions

Intersection	2030 No Project				2030 With Northlake Phase 1				Decrease	
	AM		PM		AM		Intersection		AM	PM
	Delay	LOS	Delay		Delay	LOS	Delay		Delay	LOS
1. Old Road & I-5 SB Ramps	666.0	F	251.9	F	11.7	B	14.6	B	654.3	257.3
3. I-5 NB Ramps & Lake Hughes	>1,000	F	>1,000	F	40.0	D	28.6	C	--	--
7. I-5 SB On-Ramp & Parker	58.8	F	51.9	F	23.0	C	36.6	E	35.8	15.3
8. I-5 NB Off-Ramp & Parker/Ridge Route	>1,000	F	>1,000	F	63.9	E	70.6	E	--	--
Delay = Average Delay/Vehicle (seconds) Intersection numbering refers to the Northlake VTTM 51852 Traffic Impact Analysis (December 2005) numbering system Level of service ranges (based on average vehicle delay) for two-way stop-controlled intersections: 0-10 A > 10-15 B > 15-25 C > 25-35 D > 35-50 E > 50 F Level of service ranges (based on average vehicle delay) for signalized intersections: <10 A > 10-20 B > 20-35 C > 35-55 D > 55-80 E > 80 F										

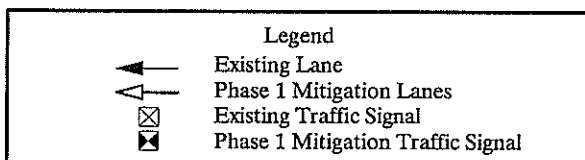
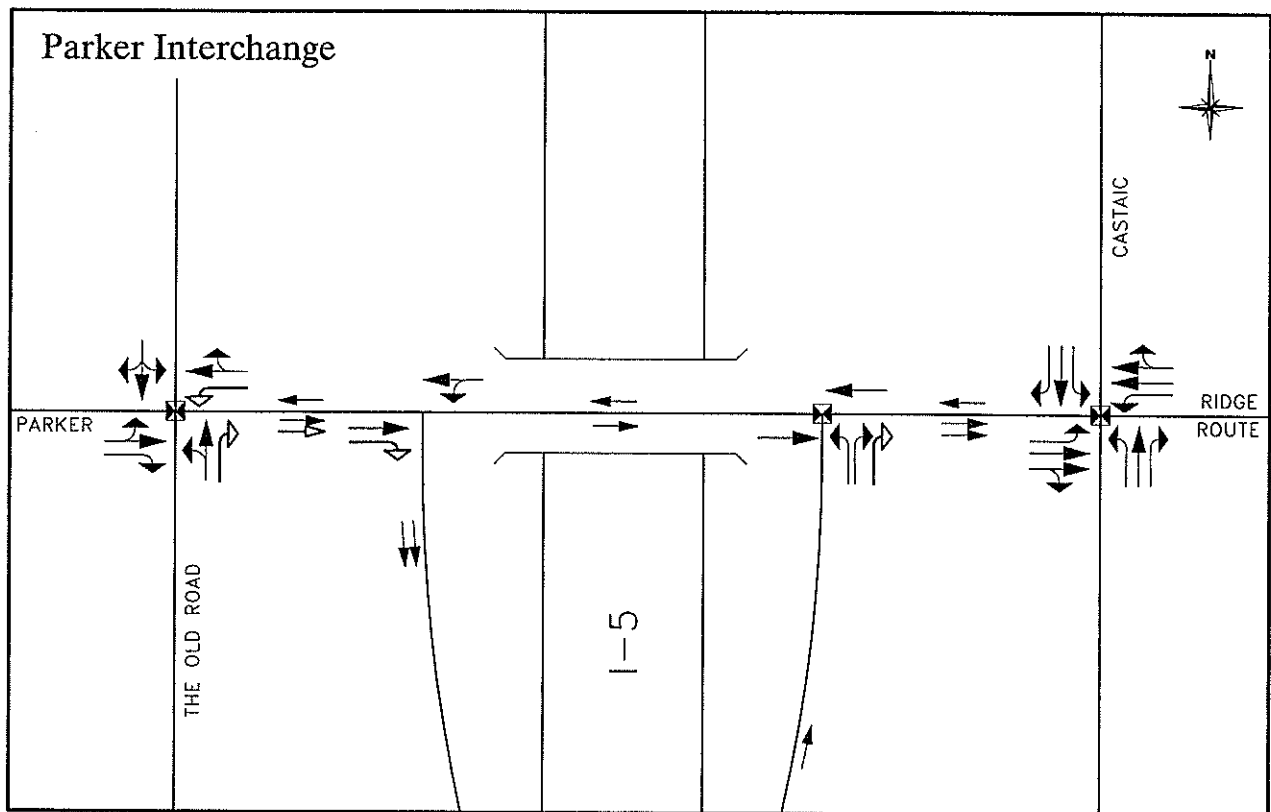
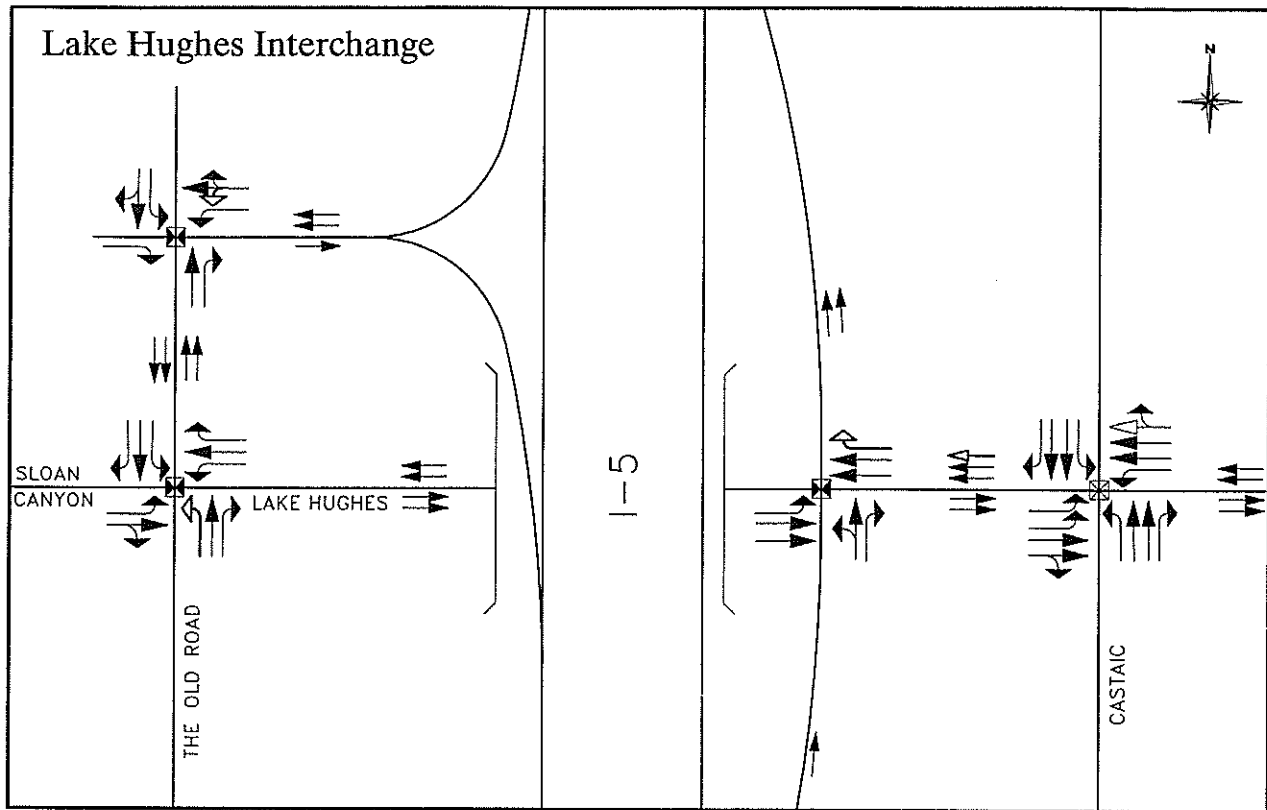


Figure 8

NORTHLAKE PHASE 1 (VTTM 51852) LANE CONFIGURATIONS

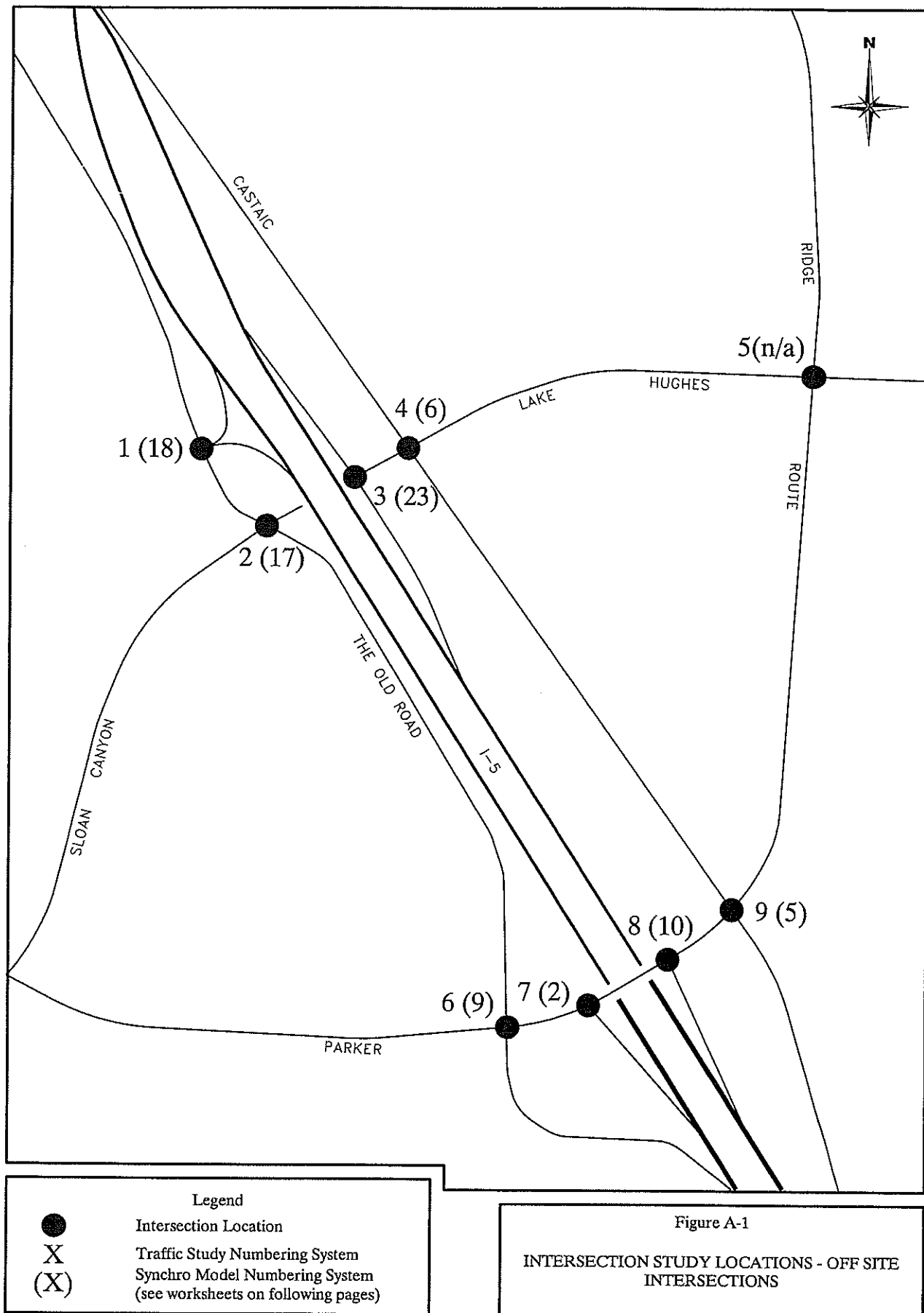
6.0 CONCLUSION

At the request of Caltrans, revised mitigation measures have been identified for four intersections under Caltrans jurisdiction that were previously identified by the project's December 2005 EIR traffic analysis as being significantly impacted by the proposed project. Caltrans specified methodology was utilized for this analysis and new mitigation measures were identified accordingly. These mitigation measures, as shown in the previously referenced Table 3, address the comments raised by Caltrans during their review of the December 2005 study.

APPENDIX A

DELAY AND LOS WORKSHEETS

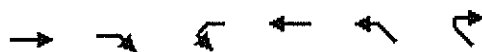






HCM Unsignalized Intersection Capacity Analysis
2: Parker & I-5 SB

2030 AM Peak Hour w/out Northlake
9/25/2006


























Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations	↵		↵			
Sign Control	Free		Free		Stop	
Grade	0%		0%		0%	
Volume (veh/h)	346	380	820	819	0	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	346	380	820	819	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			726	2995	536	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			726	2995	536	
tC, single (s)			4.1	6.4	6.2	
tC, 2 stage (s)						
tF (s)			2.2	3.5	3.3	
p0 queue free %			5	100	100	
cM capacity (veh/h)			863	1	545	
Direction, Lane #	EB 1	WB 1				
Volume Total	726	1639				
Volume Left	0	820				
Volume Right	380	0				
cSH	1700	863				
Volume to Capacity	0.43	0.95				
Queue Length 95th (ft)	0	376				
Control Delay (s)	0.0	58.8				
Lane LOS		F				
Approach Delay (s)	0.0	58.8				
Approach LOS						
Intersection Summary						
Average Delay			40.8			
Analysis Period (min)			15			

Intersection has too many legs for HCM analysis.

Lanes, Volumes, Timings
6: Lake Hughes & Castaic

2030 AM Peak Hour w/out Northlake
9/26/2006

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	3303	3348	0	1787	3574	1599	1641	3282	1468	1736	3471	1553
Flt Permitted	0.950			0.950			0.732			0.719		
Satd. Flow (perm)	3303	3348	0	1787	3574	1599	1264	3282	1468	1314	3471	1553
Satd. Flow (RTOR)		29				56			15			198
Volume (vph)	646	690	87	24	796	56	176	55	15	27	37	198
Lane Group Flow (vph)	646	777	0	24	796	56	176	55	15	27	37	198
Turn Type	Prot			Prot		Perm	Perm		Perm	Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases						8	2		2	6		6
Total Split (s)	18.0	30.0	0.0	8.0	20.0	20.0	22.0	22.0	22.0	22.0	22.0	22.0
Act Effct Green (s)	13.7	30.0		4.0	15.5	15.5	18.0	18.0	18.0	18.0	18.0	18.0
Actuated g/C Ratio	0.23	0.51		0.06	0.26	0.26	0.30	0.30	0.30	0.30	0.30	0.30
v/c Ratio	0.85	0.45		0.21	0.85	0.12	0.46	0.06	0.03	0.07	0.04	0.32
Control Delay	34.7	10.8		32.0	31.7	6.4	21.7	15.2	8.3	15.7	15.1	4.6
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.7	10.8		32.0	31.7	6.4	21.7	15.2	8.3	15.7	15.1	4.6
LOS	C	B		C	C	A	C	B	A	B	B	A
Approach Delay		21.6			30.1			19.5			7.2	
Approach LOS		C			C			B			A	

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 59.2

Control Type: Actuated-Uncoordinated

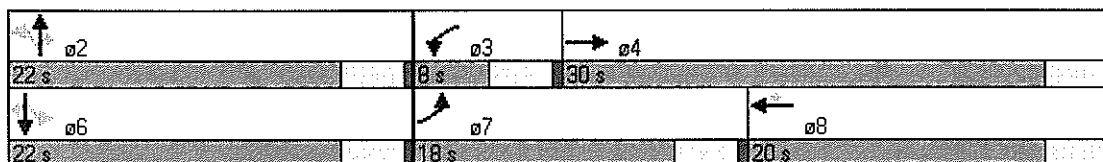
Maximum v/c Ratio: 0.85

Intersection Signal Delay: 22.7

Intersection LOS: C


















Analysis Period (min) 15

Splits and Phases: 6: Lake Hughes & Castaic



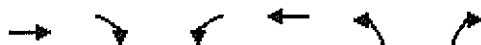
HCM Unsignalized Intersection Capacity Analysis
9: Parker & Old Road

2030 AM Peak Hour w/out Northlake
9/25/2006

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	5	304	171	580	134	24	101	504	328	36	192	9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	5	304	171	580	134	24	101	504	328	36	192	9
Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1							
Volume Total (vph)	309	171	738	933	237							
Volume Left (vph)	5	0	580	101	36							
Volume Right (vph)	0	171	24	328	9							
Hadj (s)	0.03	-0.68	0.19	-0.16	0.04							
Departure Headway (s)	8.9	8.2	8.5	8.0	9.2							
Degree Utilization, x	0.76	0.39	1.74	2.08	0.60							
Capacity (veh/h)	393	435	428	455	380							
Control Delay (s)	33.8	15.0	362.7	513.7	25.2							
Approach Delay (s)	27.1		362.7	513.7	25.2							
Approach LOS	D		F	F	D							
Intersection Summary												
Delay			320.7									
HCM Level of Service			F									
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
10: Parker & I-5 NB

2030 AM Peak Hour w/out Northlake
9/25/2006



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↗	↗
Sign Control	Free			Free	Stop	Stop
Grade	0%			0%	0%	
Volume (veh/h)	346	0	0	1393	246	850
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	346	0	0	1393	246	850
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						16
Median type					None	
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			346		1739	346
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			346		1739	346
tC, single (s)			4.2		6.5	6.3
tC, 2 stage (s)						
tF (s)			2.3		3.6	3.4
p0 queue free %			100		0	0
cM capacity (veh/h)			1191		94	688
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	346	1393	1096			
Volume Left	0	0	246			
Volume Right	0	0	850			
cSH	1700	1700	320			
Volume to Capacity	0.20	0.82	3.42			
Queue Length 95th (ft)	0	0	Err			
Control Delay (s)	0.0	0.0	Err			
Lane LOS			F			
Approach Delay (s)	0.0	0.0	Err			
Approach LOS			F			
Intersection Summary						
Average Delay		3865.6				
Analysis Period (min)		15				























Intersection has too many lanes per leg.

HCM All-Way analysis is limited to two lanes per leg.

Channelized right turn lanes are not counted.




















HCM Unsignalized Intersection Capacity Analysis
18: I-5 SB & Old Road

2030 AM Peak Hour w/out Northlake
9/25/2006

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Volume (veh/h)	1	36	0	356	17	14	44	167	620	203	208	2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	1	36	0	356	17	14	44	167	620	203	208	2
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None					None						
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	892	1490	209	887	871	167	210			787		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	892	1490	209	887	871	167	210			787		
tC, single (s)	7.1	6.5	6.2	7.2	6.6	6.3	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.1	3.4	2.2			2.2		
p0 queue free %	99	60	100	0	92	98	97			76		
cM capacity (veh/h)	193	91	831	145	209	867	1343			837		
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2			
Volume Total	1	36	356	31	44	167	620	203	210			
Volume Left	1	0	356	0	44	0	0	203	0			
Volume Right	0	0	0	14	0	0	620	0	2			
cSH	193	91	145	318	1343	1700	1700	837	1700			
Volume to Capacity	0.01	0.40	2.45	0.10	0.03	0.10	0.36	0.24	0.12			
Queue Length 95th (ft)	0	40	767	8	3	0	0	24	0			
Control Delay (s)	23.8	68.8	722.5	17.6	7.8	0.0	0.0	10.7	0.0			
Lane LOS	C	F	F	C	A			B				
Approach Delay (s)	67.5		666.0		0.4			5.2				
Approach LOS	F		F									
Intersection Summary												
Average Delay	157.5											
Analysis Period (min)	15											

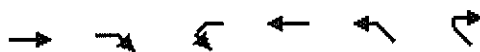
HCM Unsignalized Intersection Capacity Analysis
23: Lake Hughes & I-5 NB

2030 AM Peak Hour w/out Northlake
9/25/2006

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 							
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	118	1114	0	0	922	209	155	0	309	0	0	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	118	1114	0	0	922	209	155	0	309	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (ft)					306							
pX, platoon unblocked	0.80						0.80	0.80		0.80	0.80	0.80
vC, conflicting volume	1131			1114			1811	2481	557	2128	2376	566
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	915			1114			1764	2600	557	2160	2470	210
tC, single (s)	4.2			4.2			7.6	6.6	7.0	7.6	6.6	7.0
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.6	4.1	3.4	3.5	4.0	3.3
p0 queue free %	80			100			0	100	33	100	100	100
cM capacity (veh/h)	579			600			35	15	464	6	18	633
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	NB 2					
Volume Total	118	557	557	615	516	155	309					
Volume Left	118	0	0	0	0	155	0					
Volume Right	0	0	0	0	209	0	309					
cSH	579	1700	1700	1700	1700	35	464					
Volume to Capacity	0.20	0.33	0.33	0.36	0.30	4.49	0.67					
Queue Length 95th (ft)	19	0	0	0	0	Err	120					
Control Delay (s)	12.8	0.0	0.0	0.0	0.0	Err	26.9					
Lane LOS	B					F	D					
Approach Delay (s)	1.2			0.0		3358.1						
Approach LOS						F						
Intersection Summary												
Average Delay	551.7											
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis
2: Parker & I-5 SB

2030 PM Peak Hour w/out Northlake
9/25/2006


























Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations	↑			↑		
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	501	329	708	879	0	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	501	329	708	879	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None		
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			830	2960	666	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			830	2960	666	
tC, single (s)			4.1	6.4	6.2	
tC, 2 stage (s)						
tF (s)			2.2	3.5	3.3	
p0 queue free %			10	100	100	
cM capacity (veh/h)			789	2	460	
Direction, Lane #	EB 1	WB 1				
Volume Total	830	1587				
Volume Left	0	708				
Volume Right	329	0				
cSH	1700	789				
Volume to Capacity	0.49	0.90				
Queue Length 95th (ft)	0	300				
Control Delay (s)	0.0	51.9				
Lane LOS		F				
Approach Delay (s)	0.0	51.9				
Approach LOS						
Intersection Summary						
Average Delay		34.1				
Analysis Period (min)		15				

Intersection has too many legs for HCM analysis.

Lanes, Volumes, Timings
6: Lake Hughes & Castaic

2030 PM Peak Hour w/out Northlake
9/26/2006

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	3303	3218	0	1787	3574	1599	1641	3282	1468	1736	3471	1553
Flt Permitted	0.950			0.950			0.688			0.675		
Satd. Flow (perm)	3303	3218	0	1787	3574	1599	1188	3282	1468	1233	3471	1553
Satd. Flow (RTOR)		208				63			47			436
Volume (vph)	355	370	215	46	375	63	338	122	47	115	102	436
Lane Group Flow (vph)	355	585	0	46	375	63	338	122	47	115	102	436
Turn Type	Prot			Prot		Perm	Perm		Perm	Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases						8	2		2	6		6
Total Split (s)	13.0	24.0	0.0	9.0	20.0	20.0	27.0	27.0	27.0	27.0	27.0	27.0
Act Effct Green (s)	10.8	20.7		5.0	11.3	11.3	25.9	25.9	25.9	25.9	25.9	25.9
Actuated g/C Ratio	0.18	0.34		0.08	0.19	0.19	0.43	0.43	0.43	0.43	0.43	0.43
v/c Ratio	0.60	0.47		0.31	0.56	0.18	0.66	0.09	0.07	0.22	0.07	0.47
Control Delay	27.3	11.2		31.7	24.9	7.2	23.5	11.5	4.7	13.4	11.4	3.6
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.3	11.2		31.7	24.9	7.2	23.5	11.5	4.7	13.4	11.4	3.6
LOS	C	B		C	C	A	C	B	A	B	B	A
Approach Delay		17.3			23.2			18.9			6.5	
Approach LOS		B			C			B			A	

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 60

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Control Type: Actuated-Coordinated

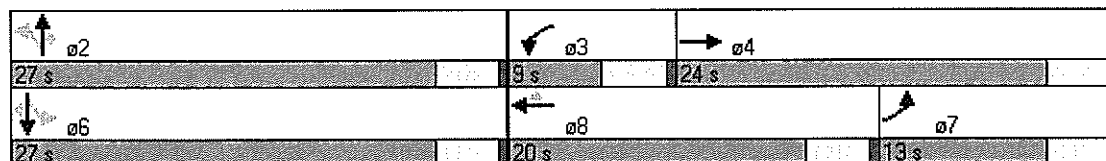
Maximum v/c Ratio: 0.66

Intersection Signal Delay: 16.0

Intersection LOS: B


















Analysis Period (min) 15

Splits and Phases: 6: Lake Hughes & Castaic



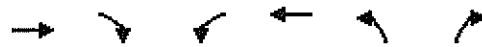
HCM Unsignalized Intersection Capacity Analysis
9: Parker & Old Road

2030 PM Peak Hour w/out Northlake
9/25/2006

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	11	235	87	458	352	71	123	233	504	53	236	26
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	11	235	87	458	352	71	123	233	504	53	236	26
Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1							
Volume Total (vph)	246	87	881	860	315							
Volume Left (vph)	11	0	458	123	53							
Volume Right (vph)	0	87	71	504	26							
Hadj (s)	0.04	-0.68	0.11	-0.29	0.02							
Departure Headway (s)	9.2	8.5	8.5	8.0	8.8							
Degree Utilization, x	0.63	0.21	2.07	1.90	0.77							
Capacity (veh/h)	375	413	431	458	402							
Control Delay (s)	25.4	12.5	508.0	432.7	35.3							
Approach Delay (s)	22.0		508.0	432.7	35.3							
Approach LOS	C		F	F	E							
Intersection Summary												
Delay			350.9									
HCM Level of Service			F									
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
10: Parker & I-5 NB

2030 PM Peak Hour w/out Northlake
9/25/2006



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↗	↗
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	505	0	0	1167	419	1058
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	505	0	0	1167	419	1058
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						16
Median type					None	
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			505		1672	505
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			505		1672	505
tC, single (s)			4.2		6.5	6.3
tC, 2 stage (s)						
tF (s)			2.3		3.6	3.4
p0 queue free %			100		0	0
cM capacity (veh/h)			1039		103	559
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	505	1167	1477			
Volume Left	0	0	419			
Volume Right	0	0	1058			
cSH	1700	1700	259			
Volume to Capacity	0.30	0.69	5.71			
Queue Length 95th (ft)	0	0	Err			
Control Delay (s)	0.0	0.0	Err			
Lane LOS			F			
Approach Delay (s)	0.0	0.0	Err			
Approach LOS			F			
Intersection Summary						
Average Delay			4689.9			
Analysis Period (min)			15			























Intersection has too many lanes per leg.

HCM All-Way analysis is limited to two lanes per leg.

Channelized right turn lanes are not counted.


















HCM Unsignalized Intersection Capacity Analysis
18: I-5 SB & Old Road

2030 PM Peak Hour w/out Northlake
9/25/2006

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Volume (veh/h)	3	60	0	363	17	19	68	420	394	98	118	5
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	3	60	0	363	17	19	68	420	394	98	118	5
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage veh												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	900	1266	120	900	875	420	123			814		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	900	1266	120	900	875	420	123			814		
tC, single (s)	7.1	6.5	6.2	7.2	6.6	6.3	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.1	3.4	2.2			2.2		
p0 queue free %	99	58	100	0	93	97	95			88		
cM capacity (veh/h)	209	142	931	151	238	625	1446			817		
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2			
Volume Total	3	60	242	157	68	420	394	98	123			
Volume Left	3	0	242	121	68	0	0	98	0			
Volume Right	0	0	0	19	0	0	394	0	5			
cSH	209	142	151	174	1446	1700	1700	817	1700			
Volume to Capacity	0.01	0.42	1.60	0.90	0.05	0.25	0.23	0.12	0.07			
Queue Length 95th (ft)	1	47	419	167	4	0	0	10	0			
Control Delay (s)	22.5	47.9	351.9	97.9	7.6	0.0	0.0	10.0	0.0			
Lane LOS	C	E	F	F	A			B				
Approach Delay (s)	46.7		251.9		0.6			4.4				
Approach LOS	E		F									
Intersection Summary												
Average Delay	67.1											
Analysis Period (min)	15											

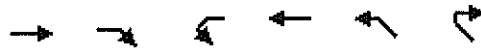
HCM Unsignalized Intersection Capacity Analysis
23: Lake Hughes & I-5 NB

2030 PM Peak Hour w/out Northlake
9/25/2006

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Volume (veh/h)	189	533	0	0	731	419	478	0	408	0	0	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	189	533	0	0	731	419	478	0	408	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)	12											
Median type	None						None					
Median storage veh												
Upstream signal (ft)	306											
pX, platoon unblocked	0.92						0.92	0.92		0.92	0.92	0.92
vC, conflicting volume	1150			533			1276	2061	266	1585	1852	575
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1075			533			1213	2066	266	1548	1838	449
tC, single (s)	4.2			4.2			7.6	6.6	7.0	7.6	6.6	7.0
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.6	4.1	3.4	3.5	4.0	3.3
p0 queue free %	67			100			0	100	43	100	100	100
cM capacity (veh/h)	576			1003			91	32	720	23	45	507
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1						
Volume Total	189	266	266	487	663	886						
Volume Left	189	0	0	0	0	478						
Volume Right	0	0	0	0	419	408						
cSH	576	1700	1700	1700	1700	153						
Volume to Capacity	0.33	0.16	0.16	0.29	0.39	5.77						
Queue Length 95th (ft)	36	0	0	0	0	Err						
Control Delay (s)	14.3	0.0	0.0	0.0	0.0	Err						
Lane LOS	B					F						
Approach Delay (s)	3.7			0.0		Err						
Approach LOS						F						
Intersection Summary												
Average Delay	3213.1											
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis 2030 AM Peak Hour with Northlake Phase 1
2: Parker & I-5 SB

1/5/2007



Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations	↵		↵			
Sign Control	Free		Free		Stop	
Grade	0%		0%		0%	
Volume (veh/h)	354	380	933	850	0	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	354	380	933	850	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median typeNone						
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			734	3260	544	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			734	3260	544	
tC, single (s)			4.1	6.4	6.2	
tC, 2 stage (s)						
tF (s)			2.2	3.5	3.3	
p0 queue free %			0	0	100	
cM capacity (veh/h)			857	0	539	
Direction, Lane #EB 1WB 1						
Volume Total	734		1783			
Volume Left	0		933			
Volume Right	380		0			
cSH	1700		857			
Volume to Capacity	0.43		1.09			
Queue Length 95th (ft)	0		600			
Control Delay (s)	0.0		115.9			
Lane LOS			F			
Approach Delay (s)	0.0		115.9			
Approach LOS						
Intersection Summary						
Average Delay			82.1			
Analysis Period (min)			15			

Intersection has too many legs for HCM analysis.

Lanes, Volumes, Timings
6: Lake Hughes & Castaic

2030 AM Peak Hour with Northlake Phase 1
9/26/2006

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕		↔	↕	↔	↔	↕	↔	↔	↕	↔
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	3303	3355	0	1787	3574	1599	1641	3282	1468	1736	3471	1553
Flt Permitted	0.950			0.950			0.732			0.719		
Satd. Flow (perm)	3303	3355	0	1787	3574	1599	1264	3282	1468	1314	3471	1553
Satd. Flow (RTOR)		24				71			15			198
Volume (vph)	646	811	87	31	1412	75	176	55	15	27	37	198
Lane Group Flow (vph)	646	898	0	31	1412	75	176	55	15	27	37	198
Turn Type	Prot			Prot		Perm	Perm		Perm	Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases						8	2		2	6		6
Total Split (s)	21.0	50.0	0.0	9.0	38.0	38.0	21.0	21.0	21.0	21.0	21.0	21.0
Act Effct Green (s)	17.0	51.0		5.0	33.6	33.6	17.0	17.0	17.0	17.0	17.0	17.0
Actuated g/C Ratio	0.21	0.64		0.06	0.42	0.42	0.21	0.21	0.21	0.21	0.21	0.21
v/c Ratio	0.92	0.42		0.30	0.94	0.10	0.65	0.08	0.05	0.10	0.05	0.41
Control Delay	51.2	8.2		44.4	35.1	4.6	41.9	25.7	13.1	26.5	25.4	7.1
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.2	8.2		44.4	35.1	4.6	41.9	25.7	13.1	26.5	25.4	7.1
LOS	D	A		D	D	A	D	C	B	C	C	A
Approach Delay		26.2			33.8			36.5			11.7	
Approach LOS		C			C			D			B	

Intersection Summary

Cycle Length: 80

Actuated Cycle Length: 79.6

Control Type: Actuated-Uncoordinated

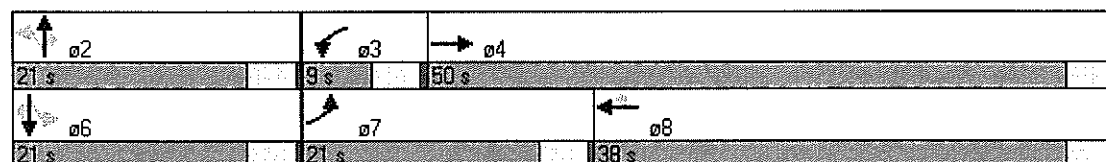
Maximum v/c Ratio: 0.94

Intersection Signal Delay: 29.1





















Intersection LOS: C

Analysis Period (min) 15

Splits and Phases: 6: Lake Hughes & Castaic

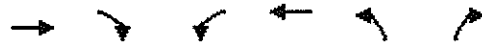


HCM Unsignalized Intersection Capacity Analysis 2030 AM Peak Hour with Northlake Phase 1
 9: Parker & Old Road 1/5/2007

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	5	304	171	611	134	24	101	504	336	36	192	9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	5	304	171	611	134	24	101	504	336	36	192	9
Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1							
Volume Total (vph)	309	171	769	941	237							
Volume Left (vph)	5	0	611	101	36							
Volume Right (vph)	0	171	24	336	9							
Hadj (s)	0.03	-0.68	0.19	-0.16	0.04							
Departure Headway (s)	8.9	8.2	8.5	8.0	9.2							
Degree Utilization, x	0.76	0.39	1.81	2.10	0.60							
Capacity (veh/h)	393	435	429	455	380							
Control Delay (s)	33.8	15.0	395.0	521.3	25.2							
Approach Delay (s)	27.1		395.0	521.3	25.2							
Approach LOS	D		F	F	D							
Intersection Summary												
Delay			335.1									
HCM Level of Service			F									
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis 2030 AM Peak Hour with Northlake Phase 1
10: Parker & I-5 NB

1/5/2007

























Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↘	↗
Sign Control	Free			Free	Stop	Stop
Grade	0%			0%	0%	
Volume (veh/h)	354	0	0	1537	246	957
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	354	0	0	1537	246	957
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						16
Median type					None	
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			354		1891	354
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			354		1891	354
tC, single (s)			4.2		6.5	6.3
tC, 2 stage (s)						
tF (s)			2.3		3.6	3.4
p0 queue free %			100		0	0
cM capacity (veh/h)			1183		75	681
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	354	1537	1203			
Volume Left	0	0	246			
Volume Right	0	0	957			
cSH	1700	1700	279			
Volume to Capacity	0.21	0.90	4.30			
Queue Length 95th (ft)	0	0	Err			
Control Delay (s)	0.0	0.0	Err			
Lane LOS			F			
Approach Delay (s)	0.0	0.0	Err			
Approach LOS			F			
Intersection Summary						
Average Delay			3887.8			
Analysis Period (min)			15			

Intersection has too many lanes per leg.


















HCM All-Way analysis is limited to two lanes per leg.

Channelized right turn lanes are not counted.

HCM Unsignalized Intersection Capacity Analysis 2030 AM Peak Hour with Northlake Phase 1
18: I-5 SB & Old Road 1/5/2007

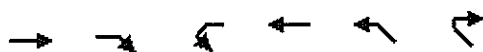
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Volume (veh/h)	1	36	0	374	17	14	44	167	1179	203	208	2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	1	36	0	374	17	14	44	167	1179	203	208	2
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type												
Median storage veh												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	892	2049	209	887	871	167	210			1346		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	892	2049	209	887	871	167	210			1346		
tC, single (s)	7.1	6.5	6.2	7.2	6.6	6.3	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.1	3.4	2.2			2.2		
p0 queue free %	99	0	100	0	90	98	97			61		
cM capacity (veh/h)	162	33	831	0	167	867	1343			515		
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2			
Volume Total	1	36	374	31	44	167	1179	203	210			
Volume Left	1	0	374	0	44	0	0	203	0			
Volume Right	0	0	0	14	0	0	1179	0	2			
cSH	162	33	0	263	1343	1700	1700	515	1700			
Volume to Capacity	0.01	1.10	Err	0.12	0.03	0.10	0.69	0.39	0.12			
Queue Length 95th (ft)	0	97	Err	10	3	0	0	47	0			
Control Delay (s)	27.3	372.8	Err	20.5	7.8	0.0	0.0	16.5	0.0			
Lane LOS	D	F	F	C	A			C				
Approach Delay (s)	363.5		Err		0.2			8.1				
Approach LOS	F		F									
Intersection Summary												
Average Delay												
Analysis Period (min)												

HCM Unsignalized Intersection Capacity Analysis 2030 AM Peak Hour with Northlake Phase 1
 23: Lake Hughes & I-5 NB 1/5/2007

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	118	1132	0	0	1481	266	155	0	412	0	0	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	118	1132	0	0	1481	266	155	0	412	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)					306							
pX, platoon unblocked	0.62						0.62	0.62		0.62	0.62	0.62
vC, conflicting volume	1747			1132			2108	3115	566	2828	2982	874
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1592			1132			2175	3797	566	3334	3582	185
tC, single (s)	4.2			4.2			7.6	6.6	7.0	7.6	6.6	7.0
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.6	4.1	3.4	3.5	4.0	3.3
p0 queue free %	52			100			0	100	10	100	100	100
cM capacity (veh/h)	245			590			10	1	457	0	2	509
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	NB 2					
Volume Total	118	566	566	987	760	155	412					
Volume Left	118	0	0	0	0	155	0					
Volume Right	0	0	0	0	266	0	412					
cSH	245	1700	1700	1700	1700	10	457					
Volume to Capacity	0.48	0.33	0.33	0.58	0.45	16.31	0.90					
Queue Length 95th (ft)	61	0	0	0	0	Err	248					
Control Delay (s)	32.7	0.0	0.0	0.0	0.0	Err	51.3					
Lane LOS	D					F	F					
Approach Delay (s)	3.1			0.0		2770.7						
Approach LOS						F						
Intersection Summary												
Average Delay	441.9											
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis 2030 PM Peak Hour with Northlake Phase 1
 2: Parker & I-5 SB

9/26/2006


























Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations	↰		↰			
Sign Control	Free		Free		Stop	
Grade	0%		0%		0%	
Volume (veh/h)	530	329	853	889	0	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	530	329	853	889	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			859	3290	694	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			859	3290	694	
tC, single (s)			4.1	6.4	6.2	
tC, 2 stage (s)						
tF (s)			2.2	3.5	3.3	
p0 queue free %			0	0	100	
cM capacity (veh/h)			769	0	442	
Direction, Lane #	EB 1	WB 1				
Volume Total	859	1742				
Volume Left	0	853				
Volume Right	329	0				
cSH	1700	769				
Volume to Capacity	0.51	1.11				
Queue Length 95th (ft)	0	596				
Control Delay (s)	0.0	137.6				
Lane LOS	F					
Approach Delay (s)	0.0	137.6				
Approach LOS						
Intersection Summary						
Average Delay			92.2			
Analysis Period (min)			15			

Intersection has too many legs for HCM analysis.

Lanes, Volumes, Timings
6: Lake Hughes & Castaic

2030 PM Peak Hour with Northlake Phase 1

9/26/2006

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	3303	3286	0	1787	3574	1599	1641	3282	1468	1736	3471	1553
Flt Permitted	0.950			0.950			0.688			0.675		
Satd. Flow (perm)	3303	3286	0	1787	3574	1599	1188	3282	1468	1233	3471	1553
Satd. Flow (RTOR)		69				234			93			436
Volume (vph)	355	711	215	123	537	234	338	122	93	226	102	436
Lane Group Flow (vph)	355	926	0	123	537	234	338	122	93	226	102	436
Turn Type	Prot			Prot		Perm	Perm		Perm	Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases						8	2		2	6		6
Total Split (s)	13.0	23.0	0.0	10.0	20.0	20.0	27.0	27.0	27.0	27.0	27.0	27.0
Act Effct Green (s)	9.8	19.7		6.0	14.0	14.0	24.3	24.3	24.3	24.3	24.3	24.3
Actuated g/C Ratio	0.16	0.33		0.10	0.23	0.23	0.40	0.40	0.40	0.40	0.40	0.40
v/c Ratio	0.66	0.82		0.69	0.65	0.42	0.70	0.09	0.14	0.45	0.07	0.49
Control Delay	31.1	25.5		48.8	24.4	5.6	26.2	12.1	3.9	17.4	12.0	3.8
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.1	25.5		48.8	24.4	5.6	26.2	12.1	3.9	17.4	12.0	3.8
LOS	C	C		D	C	A	C	B	A	B	B	A
Approach Delay		27.0			22.8			19.4			8.9	
Approach LOS		C			C			B			A	

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 60

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Control Type: Actuated-Coordinated

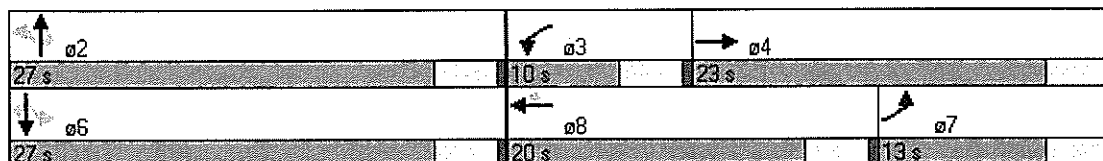
Maximum v/c Ratio: 0.82

Intersection Signal Delay: 20.8


















Intersection LOS: C

Analysis Period (min) 15

Splits and Phases: 6: Lake Hughes & Castaic

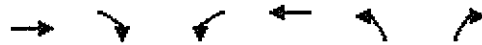


HCM Unsignalized Intersection Capacity Analysis 2030 PM Peak Hour with Northlake Phase 1
 9: Parker & Old Road 9/26/2006

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	11	235	87	468	352	71	123	233	533	53	236	26
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	11	235	87	468	352	71	123	233	533	53	236	26
Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1							
Volume Total (vph)	246	87	891	889	315							
Volume Left (vph)	11	0	468	123	53							
Volume Right (vph)	0	87	71	533	26							
Hadj (s)	0.04	-0.68	0.11	-0.30	0.02							
Departure Headway (s)	9.2	8.5	8.5	8.0	8.8							
Degree Utilization, x	0.63	0.21	2.09	1.96	0.77							
Capacity (veh/h)	375	413	431	459	402							
Control Delay (s)	25.4	12.5	518.7	460.1	35.4							
Approach Delay (s)	22.0		518.7	460.1	35.4							
Approach LOS	C		F	F	E							
Intersection Summary												
Delay			366.4									
HCM Level of Service			F									
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis 2030 PM Peak Hour with Northlake Phase 1
10: Parker & I-5 NB

9/26/2006

























Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↖	↗
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	534	0	0	1322	419	1524
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	534	0	0	1322	419	1524
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						16
Median type					None	
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			534		1856	534
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			534		1856	534
tC, single (s)			4.2		6.5	6.3
tC, 2 stage (s)						
tF (s)			2.3		3.6	3.4
p0 queue free %			100		0	0
cM capacity (veh/h)			1014		79	538
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	534	1322	1943			
Volume Left	0	0	419			
Volume Right	0	0	1524			
cSH	1700	1700	248			
Volume to Capacity	0.31	0.78	7.85			
Queue Length 95th (ft)	0	0	Err			
Control Delay (s)	0.0	0.0	Err			
Lane LOS			F			
Approach Delay (s)	0.0	0.0	Err			
Approach LOS			F			
Intersection Summary						
Average Delay		5114.0				
Analysis Period (min)		15				

Intersection has too many lanes per leg.



















HCM All-Way analysis is limited to two lanes per leg.

Channelized right turn lanes are not counted.

HCM Unsignalized Intersection Capacity Analysis 2030 PM Peak Hour with Northlake Phase 1
18: I-5 SB & Old Road 9/26/2006

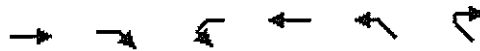
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Volume (veh/h)	3	60	0	429	17	19	68	420	531	98	118	5
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	3	60	0	429	17	19	68	420	531	98	118	5
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None					None						
Median storage veh												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	900	1404	120	900	875	420	123			951		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	900	1404	120	900	875	420	123			951		
tC, single (s)	7.1	6.5	6.2	7.2	6.6	6.3	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.1	3.4	2.2			2.2		
p0 queue free %	99	48	100	0	93	97	95			87		
cM capacity (veh/h)	206	115	931	132	234	625	1446			726		
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2			
Volume Total	3	60	286	179	68	420	531	98	123			
Volume Left	3	0	286	143	68	0	0	98	0			
Volume Right	0	0	0	19	0	0	531	0	5			
cSH	206	115	132	151	1446	1700	1700	726	1700			
Volume to Capacity	0.01	0.52	2.17	1.19	0.05	0.25	0.31	0.13	0.07			
Queue Length 95th (ft)	1	60	594	253	4	0	0	12	0			
Control Delay (s)	22.7	66.2	603.7	191.2	7.6	0.0	0.0	10.7	0.0			
Lane LOS	C	F	F	F	A			B				
Approach Delay (s)	64.1		444.9		0.5			4.8				
Approach LOS	F		F									
Intersection Summary												
Average Delay	120.2											
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis 2030 PM Peak Hour with Northlake Phase 1
 23: Lake Hughes & I-5 NB 9/26/2006

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Sign Control	Free			Free			Stop			Stop			
Grade	0%			0%			0%			0%			
Volume (veh/h)	189	599	0	0	868	444	478	0	683	0	0	0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Hourly flow rate (vph)	189	599	0	0	868	444	478	0	683	0	0	0	
Pedestrians													
Lane Width (ft)													
Walking Speed (ft/s)													
Percent Blockage													
Right turn flare (veh)										12			
Median type										None	None		
Median storage veh													
Upstream signal (ft)	306												
pX, platoon unblocked	0.87						0.87	0.87			0.87	0.87	0.87
vC, conflicting volume	1312				599			1411	2289	300	1768	2067	656
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	1211				599			1324	2332	300	1733	2077	458
tC, single (s)	4.2				4.2			7.6	6.6	7.0	7.6	6.6	7.0
tC, 2 stage (s)													
fF (s)	2.2				2.3			3.6	4.1	3.4	3.5	4.0	3.3
p0 queue free %	61				100			0	100	0	100	100	100
cM capacity (veh/h)	484				947			67	18	685	0	27	474
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1							
Volume Total	189	300	300	579	733	1161							
Volume Left	189	0	0	0	0	478							
Volume Right	0	0	0	0	444	683							
cSH	484	1700	1700	1700	1700	143							
Volume to Capacity	0.39	0.18	0.18	0.34	0.43	8.13							
Queue Length 95th (ft)	46	0	0	0	0	Err							
Control Delay (s)	17.1	0.0	0.0	0.0	0.0	Err							
Lane LOS	C						F						
Approach Delay (s)	4.1				0.0			Err					
Approach LOS													
Intersection Summary													
Average Delay	3560.9												
Analysis Period (min)	15												

HCM Unsignalized Intersection Capacity Analysis 2: Parker & I-5 SB

























2030 AM Peak Hour w/Northlake Phase 1
9/26/2006



Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations	↑	↑		↑		
Sign Control	Free			Free	Yield	
Grade	0%			0%	0%	
Volume (veh/h)	354	380	933	850	0	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	354	380	933	850	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						
Median storage veh						
Upstream signal (ft)	486			342		
pX, platoon unblocked					0.27	
vC, conflicting volume			354		3070	354
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			354		8729	354
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			21		100	100
cM capacity (veh/h)			1188		0	690
Direction, Lane #	EB 1	EB 2	WB 1			
Volume Total	354	380	1783			
Volume Left	0	0	933			
Volume Right	0	380	0			
cSH	1700	1700	1188			
Volume to Capacity	0.21	0.22	0.79			
Queue Length 95th (ft)	0	0	216			
Control Delay (s)	0.0	0.0	23.0			
Lane LOS			C			
Approach Delay (s)	0.0		23.0			
Approach LOS						
Intersection Summary						
Average Delay			16.3			
Analysis Period (min)			15			

Lanes, Volumes, Timings
5: Castaic & Ridge Route

2030 AM Peak Hour w/Northlake Phase 1
9/26/2006

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	1641	1727	1468	1770	1863	1583	1703	3331	0	1770	3529	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1641	1727	1468	1770	1863	1583	1703	3331	0	1770	3529	0
Satd. Flow (RTOR)			124			89		28			3	
Volume (vph)	9	37	124	230	62	89	184	867	149	47	1161	24
Lane Group Flow (vph)	9	37	124	230	62	89	184	1016	0	47	1185	0
Turn Type	Prot		Perm	Prot		Perm	Prot			Prot		
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6		2	2						
Total Split (s)	8.0	22.0	22.0	16.0	30.0	30.0	14.0	44.0	0.0	8.0	38.0	0.0
Act Effct Green (s)	4.0	7.5	7.5	12.1	22.1	22.1	10.1	40.3		4.0	30.8	
Actuated g/C Ratio	0.05	0.10	0.10	0.16	0.29	0.29	0.13	0.53		0.05	0.40	
v/c Ratio	0.11	0.22	0.49	0.82	0.12	0.17	0.82	0.57		0.53	0.83	
Control Delay	42.1	36.0	13.8	58.4	23.2	7.0	64.5	14.4		60.4	26.8	
Queue Delay	0.0	0.0	0.3	117.4	0.0	0.0	0.0	0.5		0.0	108.8	
Total Delay	42.1	36.0	14.1	175.8	23.2	7.0	64.5	14.8		60.4	135.5	
LOS	D	D	B	F	C	A	E	B		E	F	
Approach Delay		20.4			111.6			22.4			132.7	
Approach LOS		C			F			C			F	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 76.5

Control Type: Actuated-Uncoordinated









Maximum v/c Ratio: 0.83

Intersection Signal Delay: 79.2

Intersection LOS: E

Analysis Period (min) 15

Splits and Phases: 5: Castaic & Ridge Route

			
ø1	ø2	ø3	ø4
8 s	30 s	8 s	44 s
			
ø5	ø6	ø7	ø8
16 s	22 s	14 s	38 s

Lanes, Volumes, Timings
6: Lake Hughes & Castaic

2030 AM Peak Hour w/Northlake Phase 1
9/26/2006



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	←	↑	→	←	↑	→	←	↑	→	←	↑	→
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	3303	3355	0	1787	5095	0	1641	3282	1468	1736	3471	1553
Flt Permitted	0.950			0.950			0.732			0.719		
Satd. Flow (perm)	3303	3355	0	1787	5095	0	1264	3282	1468	1314	3471	1553
Satd. Flow (RTOR)		25			13				15			198
Volume (vph)	646	811	87	31	1412	75	176	55	15	27	37	198
Lane Group Flow (vph)	646	898	0	31	1487	0	176	55	15	27	37	198
Turn Type	Prot			Prot			Perm		Perm	Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2		2	6		6
Total Split (s)	21.0	46.0	0.0	9.0	34.0	0.0	20.0	20.0	20.0	20.0	20.0	20.0
Act Effect Green (s)	16.3	44.3		5.0	27.5		16.1	16.1	16.1	16.1	16.1	16.1
Actuated g/C Ratio	0.23	0.62		0.06	0.38		0.22	0.22	0.22	0.22	0.22	0.22
v/c Ratio	0.86	0.43		0.27	0.76		0.62	0.07	0.04	0.09	0.05	0.40
Control Delay	41.0	8.4		40.4	22.1		38.0	23.9	12.3	24.7	23.6	6.8
Queue Delay	0.0	1.2		0.0	2.2		8.7	0.0	0.0	0.0	0.0	0.8
Total Delay	41.0	9.6		40.4	24.4		46.7	23.9	12.3	24.7	23.6	7.6
LOS	D	A		D	C		D	C	B	C	C	A
Approach Delay		22.7			24.7			39.5			11.7	
Approach LOS		C			C			D			B	

Intersection Summary

Cycle Length: 75

Actuated Cycle Length: 71.9

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.86

Intersection Signal Delay: 23.9

Intersection LOS: C




















Analysis Period (min) 15

Splits and Phases: 6: Lake Hughes & Castaic

↑ ø2	↙ ø3	→ ø4
20 s	9 s	46 s
↓ ø6	↗ ø7	← ø8
20 s	21 s	34 s

Lanes, Volumes, Timings
9: Parker & Old Road

2030 AM Peak Hour w/Northlake Phase 1
1/5/2007

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	0	1879	1599	1752	1802	0	0	1848	1583	0	1839	0
Flt Permitted		0.995		0.950				0.888			0.544	
Satd. Flow (perm)	0	1872	1599	1752	1802	0	0	1654	1583	0	1008	0
Satd. Flow (RTOR)			166		14				336		2	
Volume (vph)	5	304	171	611	134	24	101	504	336	36	192	9
Lane Group Flow (vph)	0	309	171	611	158	0	0	605	336	0	237	0
Turn Type	Perm		Perm	Prot			Perm		Perm	Perm		
Protected Phases		4		3	8			2			6	
Permitted Phases	4		4				2		2	6		
Total Split (s)	20.0	20.0	20.0	38.0	58.0	0.0	42.0	42.0	42.0	42.0	42.0	0.0
Act Effct Green (s)		16.0	16.0	34.0	54.0			37.6	37.6		37.6	
Actuated g/C Ratio		0.16	0.16	0.34	0.54			0.38	0.38		0.38	
v/c Ratio		1.03	0.43	1.02	0.16			0.97	0.42		0.62	
Control Delay		101.4	10.3	76.1	11.0			61.0	4.1		33.5	
Queue Delay		0.0	0.0	0.0	0.0			0.0	0.0		0.0	
Total Delay		101.4	10.3	76.1	11.0			61.0	4.1		33.5	
LOS		F	B	E	B			E	A		C	
Approach Delay		69.0			62.7			40.7			33.5	
Approach LOS		E			E			D			C	

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 99.6

Control Type: Actuated-Uncoordinated






Maximum v/c Ratio: 1.03

Intersection Signal Delay: 52.6

Intersection LOS: D

Analysis Period (min) 15

Splits and Phases: 9: Parker & Old Road

 ø2	 ø3	 ø4
42 s	38 s	20 s
 ø6	 ø8	
42 s	58 s	

Lanes, Volumes, Timings
10: Parker & I-5 NB

2030 AM Peak Hour w/Northlake Phase 1
9/26/2006

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↘	↗
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	1810	0	0	1792	1703	2682
Flt Permitted					0.950	
Satd. Flow (perm)	1810	0	0	1792	1703	2682
Satd. Flow (RTOR)						919
Volume (vph)	354	0	0	1537	246	957
Lane Group Flow (vph)	354	0	0	1537	246	957
Turn Type					custom	
Protected Phases	4			8	5	2
Permitted Phases				2		5
Total Split (s)	78.0	0.0	0.0	78.0	21.0	21.0
Act Effct Green (s)	74.0			86.1	17.0	29.1
Actuated g/C Ratio	0.67			0.77	0.15	0.26
v/c Ratio	0.29			1.11	0.94	0.69
Control Delay	8.6			74.7	90.8	5.9
Queue Delay	0.0			33.8	0.0	0.0
Total Delay	8.6			108.4	90.8	5.9
LOS	A			F	F	A
Approach Delay	8.6			108.4	23.3	
Approach LOS	A			F	C	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 111.1

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.11

Intersection Signal Delay: 63.9

Intersection LOS: E
























Analysis Period (min) 15

Splits and Phases: 10: Parker & I-5 NB

↖ ø5	↗ ø2	→ ø4
21 s	21 s	78 s
		← ø8
		78 s

Lanes, Volumes, Timings
17: Lake Hughes & Old Road

2030 AM Peak Hour w/Northlake Phase 1
9/26/2006

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	1787	1862	0	1719	1810	1538	1719	1810	1538	1770	1863	1583
Flt Permitted	0.524			0.362			0.950			0.950		
Satd. Flow (perm)	986	1862	0	655	1810	1538	1719	1810	1538	1770	1863	1583
Satd. Flow (RTOR)		5				868			88			316
Volume (vph)	61	466	35	82	296	1259	315	155	88	16	63	469
Lane Group Flow (vph)	61	501	0	82	296	1259	315	155	88	16	63	469
Turn Type	Perm			Perm		Perm	Prot		Perm	Prot		Perm
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4	4		8	8	8		6	6			2
Total Split (s)	71.0	71.0	0.0	71.0	71.0	71.0	26.0	40.0	40.0	9.0	23.0	23.0
Act Effct Green (s)	67.1	67.1		67.1	67.1	67.1	22.0	39.1	39.1	5.0	16.6	16.6
Actuated g/C Ratio	0.57	0.57		0.57	0.57	0.57	0.19	0.33	0.33	0.04	0.14	0.14
v/c Ratio	0.11	0.47		0.22	0.29	1.01	0.98	0.26	0.15	0.22	0.24	0.95
Control Delay	13.1	17.0		15.1	14.4	36.9	94.1	31.1	7.1	64.1	46.8	46.0
Queue Delay	0.0	0.0		0.0	1.1	16.7	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.1	17.0		15.1	15.5	53.6	94.1	31.1	7.1	64.1	46.9	46.0
LOS	B	B		B	B	D	F	C	A	E	D	D
Approach Delay		16.6			44.8			62.9			46.6	
Approach LOS		B			D			E			D	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 117.7

Control Type: Actuated-Uncoordinated







Maximum v/c Ratio: 1.01

Intersection Signal Delay: 43.3

Intersection LOS: D

Analysis Period (min) 15























Splits and Phases: 17: Lake Hughes & Old Road

		
26 s	23 s	71 s
		
9 s	40 s	71 s

Lanes, Volumes, Timings
18: I-5 SB & Old Road

2030 AM Peak Hour w/Northlake Phase 1

9/26/2006

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	1770	1863	0	1618	1617	0	1719	1810	1538	1787	1879	0
Flt Permitted	0.950			0.950	0.959		0.556			0.631		
Satd. Flow (perm)	1770	1863	0	1618	1617	0	1006	1810	1538	1187	1879	0
Satd. Flow (RTOR)					6				919		1	
Volume (vph)	1	36	0	374	17	14	44	167	1179	203	208	2
Lane Group Flow (vph)	1	36	0	203	202	0	44	167	1179	203	210	0
Turn Type	Split			Split			Perm		pm+ov	Perm		
Protected Phases	4	4		8	8			2	8		6	
Permitted Phases							2		2		6	
Total Split (s)	20.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	20.0	20.0	20.0	0.0
Act Effct Green (s)	6.4	6.4		16.2	16.2		11.5	11.5	35.0	11.5	11.5	
Actuated g/C Ratio	0.14	0.14		0.41	0.41		0.29	0.29	0.88	0.29	0.29	
v/c Ratio	0.00	0.14		0.31	0.31		0.15	0.32	0.81	0.59	0.39	
Control Delay	19.0	20.1		12.9	12.5		13.6	14.2	7.9	21.5	14.7	
Queue Delay	0.0	0.0		0.8	0.8		0.0	0.0	0.2	0.0	0.0	
Total Delay	19.0	20.1		13.7	13.3		13.6	14.2	8.1	21.5	14.7	
LOS	B	C		B	B		B	B	A	C	B	
Approach Delay		20.1			13.5			9.0			18.1	
Approach LOS		C			B			A			B	

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 39.8

Control Type: Actuated-Uncoordinated





Maximum v/c Ratio: 0.81

Intersection Signal Delay: 11.7

Intersection LOS: B



















Analysis Period (min) 15

Splits and Phases: 18: I-5 SB & Old Road

 ø2	 ø4	 ø8
20 s	20 s	20 s
 ø6		
20 s		

Lanes, Volumes, Timings
23: Lake Hughes & I-5 NB

2030 AM Peak Hour w/Northlake Phase 1
9/26/2006

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	1719	3438	0	0	3406	1524	1703	1524	0	0	0	0
Flt Permitted	0.950						0.950					
Satd. Flow (perm)	1719	3438	0	0	3406	1524	1703	1524	0	0	0	0
Satd. Flow (RTOR)						266		94				
Volume (vph)	118	1132	0	0	1481	266	155	0	412	0	0	0
Lane Group Flow (vph)	118	1132	0	0	1481	266	155	412	0	0	0	0
Turn Type	Prot			Perm			Prot					
Protected Phases	7	4			8		5	2				
Permitted Phases						8						
Total Split (s)	11.0	53.0	0.0	0.0	42.0	42.0	27.0	27.0	0.0	0.0	0.0	0.0
Act Effct Green (s)	7.2	42.4			34.6	34.6	17.9	19.0				
Actuated g/C Ratio	0.10	0.60			0.49	0.49	0.25	0.27				
v/c Ratio	0.69	0.55			0.88	0.30	0.37	0.86				
Control Delay	59.3	9.5			25.7	2.8	25.5	39.4				
Queue Delay	0.0	0.5			44.0	0.3	0.1	0.0				
Total Delay	59.3	10.0			69.7	3.0	25.7	39.4				
LOS	E	B			E	A	C	D				
Approach Delay		14.7			59.6			35.6				
Approach LOS		B			E			D				

Intersection Summary

Cycle Length: 80

Actuated Cycle Length: 70.3

Control Type: Actuated-Uncoordinated






Maximum v/c Ratio: 0.88

Intersection Signal Delay: 40.0

Intersection LOS: D

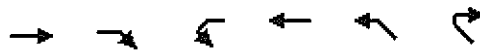
Analysis Period (min) 15

Splits and Phases: 23: Lake Hughes & I-5 NB

					
ø2			ø4		
27 s			53 s		
					
ø5			ø7	ø8	
27 s			11 s	42 s	

HCM Unsignalized Intersection Capacity Analysis
2: Parker & I-5 SB

























2030 PM Peak Hour w/Northlake Phase 1
9/26/2006



Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations	↑	↑		↑		
Sign Control	Free			Free	Yield	
Grade	0%			0%	0%	
Volume (veh/h)	530	329	853	889	0	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	530	329	853	889	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None		
Median storage veh						
Upstream signal (ft)	486			342		
pX, platoon unblocked			0.95		0.43	0.95
vC, conflicting volume			530		3125	530
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			506		5720	506
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			14		100	100
cM capacity (veh/h)			993		0	539
Direction, Lane #	EB 1	EB 2	WB 1			
Volume Total	530	329	1742			
Volume Left	0	0	853			
Volume Right	0	329	0			
cSH	1700	1700	993			
Volume to Capacity	0.31	0.19	0.86			
Queue Length 95th (ft)	0	0	279			
Control Delay (s)	0.0	0.0	36.6			
Lane LOS			E			
Approach Delay (s)	0.0		36.6			
Approach LOS						
Intersection Summary						
Average Delay			24.5			
Analysis Period (min)			15			

Lanes, Volumes, Timings
5: Castaic & Ridge Route

2030 PM Peak Hour w/Northlake Phase 1
9/26/2006

												
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	1641	1727	1468	1770	1863	1583	1703	3263	0	1770	3522	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1641	1727	1468	1770	1863	1583	1703	3263	0	1770	3522	0
Satd. Flow (RTOR)			251			49		90			5	
Volume (vph)	22	129	251	363	124	49	360	1158	452	64	640	24
Lane Group Flow (vph)	22	129	251	363	124	49	360	1610	0	64	664	0
Turn Type	Prot		Perm	Prot		Perm	Prot			Prot		
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6		2	2						
Total Split (s)	8.0	21.0	21.0	13.0	26.0	26.0	14.0	28.0	0.0	8.0	22.0	0.0
Act Effct Green (s)	4.3	10.4	10.4	10.0	21.2	21.2	16.6	31.2		4.0	17.0	
Actuated g/C Ratio	0.06	0.15	0.15	0.14	0.30	0.30	0.24	0.45		0.06	0.24	
v/c Ratio	0.22	0.50	0.58	1.44	0.22	0.10	0.89	1.07		0.63	0.77	
Control Delay	37.0	33.4	9.6	247.7	20.4	7.0	40.5	55.6		62.2	31.1	
Queue Delay	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0		0.0	0.4	
Total Delay	37.0	33.4	9.9	247.7	20.4	7.0	40.5	55.6		62.2	31.5	
LOS	D	C	A	F	C	A	D	E		E	C	
Approach Delay		18.9			173.1			52.8			34.2	
Approach LOS		B			F			D			C	

Intersection Summary

Cycle Length: 70

Actuated Cycle Length: 70

Offset: 48 (69%), Referenced to phase 2:NWT and 6:SET, Start of Green

Control Type: Actuated-Coordinated









Maximum v/c Ratio: 1.44

Intersection Signal Delay: 63.1

Intersection LOS: E






















Analysis Period (min) 15

Splits and Phases: 5: Castaic & Ridge Route

			
ø1	ø2	ø4	ø3
8 s	26 s	28 s	8 s
			
ø5	ø6	ø7	ø8
13 s	21 s	14 s	22 s

Lanes, Volumes, Timings
6: Lake Hughes & Castaic

2030 PM Peak Hour w/Northlake Phase 1
9/26/2006

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	3303	3286	0	1787	4899	0	1641	3282	1468	1736	3471	1553
Flt Permitted	0.950			0.950			0.688			0.675		
Satd. Flow (perm)	3303	3286	0	1787	4899	0	1188	3282	1468	1233	3471	1553
Satd. Flow (RTOR)		77			202				93			436
Volume (vph)	355	711	215	123	537	234	338	122	93	226	102	436
Lane Group Flow (vph)	355	926	0	123	771	0	338	122	93	226	102	436
Turn Type	Prot			Prot			Perm		Perm	Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2		2	6		6
Total Split (s)	11.0	22.0	0.0	9.0	20.0	0.0	24.0	24.0	24.0	24.0	24.0	24.0
Act Effct Green (s)	9.4	18.6		5.0	12.4		21.2	21.2	21.2	21.2	21.2	21.2
Actuated g/C Ratio	0.17	0.34		0.09	0.23		0.39	0.39	0.39	0.39	0.39	0.39
v/c Ratio	0.63	0.80		0.76	0.61		0.74	0.10	0.15	0.48	0.08	0.50
Control Delay	29.5	22.1		57.3	15.6		28.5	11.9	4.0	17.7	11.7	4.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.5	22.1		57.3	15.6		28.5	11.9	4.0	17.7	11.7	4.0
LOS	C	C		E	B		C	B	A	B	B	A
Approach Delay		24.2			21.4			20.7			9.1	
Approach LOS		C			C			C			A	

Intersection Summary

Cycle Length: 55

Actuated Cycle Length: 55

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Control Type: Actuated-Coordinated

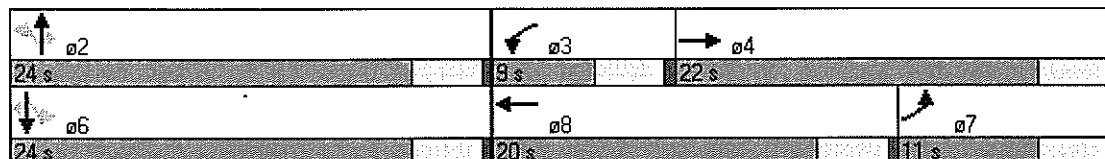
Maximum v/c Ratio: 0.80

Intersection Signal Delay: 19.6

Intersection LOS: B



















Analysis Period (min) 15

Splits and Phases: 6: Lake Hughes & Castaic



Lanes, Volumes, Timings
9: Parker & Old Road

2030 PM Peak Hour w/Northlake Phase 1
9/26/2006

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	0	1877	1599	1752	1799	0	0	1700	0	0	1828	0
Flt Permitted		0.970		0.950				0.889			0.767	
Satd. Flow (perm)	0	1825	1599	1752	1799	0	0	1522	0	0	1413	0
Satd. Flow (RTOR)			86		10			93			6	
Volume (vph)	11	235	87	468	352	71	123	233	533	53	236	26
Lane Group Flow (vph)	0	246	87	468	423	0	0	889	0	0	315	0
Turn Type	Perm		Perm	Prot			Perm			Perm		
Protected Phases		4		3	8			2			6	
Permitted Phases	4		4				2			6		
Total Split (s)	20.0	20.0	20.0	34.0	54.0	0.0	66.0	66.0	0.0	66.0	66.0	0.0
Act Effct Green (s)		16.0	16.0	30.0	50.0			62.0			62.0	
Actuated g/C Ratio		0.13	0.13	0.25	0.42			0.52			0.52	
v/c Ratio		1.01	0.30	1.07	0.56			1.07			0.43	
Control Delay		112.7	12.9	105.7	29.5			78.1			19.9	
Queue Delay		0.0	0.0	0.0	0.0			0.0			0.0	
Total Delay		112.7	12.9	105.7	29.5			78.1			19.9	
LOS		F	B	F	C			E			B	
Approach Delay		86.7			69.5			78.1			19.9	
Approach LOS		F			E			E			B	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Control Type: Actuated-Coordinated






Maximum v/c Ratio: 1.07

Intersection Signal Delay: 68.6

Intersection LOS: E

Analysis Period (min) 15

Splits and Phases: 9: Parker & Old Road

 ø2	 ø3	 ø4
66 s	34 s	20 s
 ø6	 ø8	
66 s	54 s	

Lanes, Volumes, Timings
10: Parker & I-5 NB

2030 PM Peak Hour w/Northlake Phase 1
9/26/2006



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↗	↗↗
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	1810	0	0	1792	1703	2682
Flt Permitted					0.950	
Satd. Flow (perm)	1810	0	0	1792	1703	2682
Satd. Flow (RTOR)						268
Volume (vph)	534	0	0	1322	419	1524
Lane Group Flow (vph)	534	0	0	1322	419	1524
Turn Type					custom	
Protected Phases	4			8	5	2
Permitted Phases				2		5
Total Split (s)	29.0	0.0	0.0	29.0	20.0	21.0
Act Effct Green (s)	25.0			46.0	16.0	37.0
Actuated g/C Ratio	0.36			0.66	0.23	0.53
v/c Ratio	0.83			1.12	1.08	0.99
Control Delay	33.8			79.9	97.6	35.4
Queue Delay	0.0			37.6	0.0	0.0
Total Delay	33.8			117.5	97.6	35.4
LOS	C			F	F	D
Approach Delay	33.8			117.5	48.8	
Approach LOS	C			F	D	

Intersection Summary

Cycle Length: 70

Actuated Cycle Length: 70

Offset: 69 (99%), Referenced to phase 2:WBT and 6:, Start of Green

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.12

Intersection Signal Delay: 70.6

Intersection LOS: E
























Analysis Period (min) 15

Splits and Phases: 10: Parker & I-5 NB

↖ ø5	↗ ø2	→ ø4
20 s	21 s	29 s
		← ø8
		29 s

Lanes, Volumes, Timings
17: Lake Hughes & Old Road

2030 PM Peak Hour w/Northlake Phase 1
9/26/2006

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	1787	1832	0	1719	1810	1538	1719	1810	1538	1770	1863	1583
Flt Permitted	0.437			0.436			0.950			0.950		
Satd. Flow (perm)	822	1832	0	789	1810	1538	1719	1810	1538	1770	1863	1583
Satd. Flow (RTOR)		17				852			81			196
Volume (vph)	34	247	51	151	297	898	344	100	81	27	96	196
Lane Group Flow (vph)	34	298	0	151	297	898	344	100	81	27	96	196
Turn Type	Perm			Perm		Perm	Prot		Perm	Prot		Perm
Protected Phases		4			8		1	6		5	2	
Permitted Phases	4	4		8	8	8		6	6			2
Total Split (s)	24.0	24.0	0.0	24.0	24.0	24.0	20.0	33.0	33.0	8.0	21.0	21.0
Act Effct Green (s)	16.1	16.1		16.1	16.1	16.1	13.9	23.4	23.4	4.1	8.2	8.2
Actuated g/C Ratio	0.32	0.32		0.32	0.32	0.32	0.27	0.46	0.46	0.07	0.16	0.16
v/c Ratio	0.13	0.50		0.60	0.52	0.84	0.73	0.12	0.11	0.21	0.32	0.47
Control Delay	14.6	17.1		27.5	18.4	11.3	29.4	10.8	3.9	30.3	23.9	8.2
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.6	17.1		27.5	18.4	11.3	29.4	10.8	3.9	30.3	23.9	8.2
LOS	B	B		C	B	B	C	B	A	C	C	A
Approach Delay		16.8			14.7			21.9			14.8	
Approach LOS		B			B			C			B	

Intersection Summary

Cycle Length: 65

Actuated Cycle Length: 50.6

Control Type: Actuated-Uncoordinated







Maximum v/c Ratio: 0.84

Intersection Signal Delay: 16.5

Intersection LOS: B

Analysis Period (min) 15






















Splits and Phases: 17: Lake Hughes & Old Road

 ø1	 ø2	 ø4
20 s	21 s	24 s
 ø5	 ø6	 ø8
8 s	33 s	24 s

Lanes, Volumes, Timings
18: I-5 SB & Old Road

2030 PM Peak Hour w/Northlake Phase 1

9/26/2006

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	1770	1863	0	1618	1615	0	1719	1810	1538	1787	1870	0
Flt Permitted	0.950			0.950	0.960		0.678			0.250		
Satd. Flow (perm)	1770	1863	0	1618	1615	0	1227	1810	1538	470	1870	0
Satd. Flow (RTOR)					7				531		3	
Volume (vph)	3	60	0	429	17	19	68	420	531	98	118	5
Lane Group Flow (vph)	3	60	0	235	230	0	68	420	531	98	123	0
Turn Type	Split			Split			Perm		pm+ov	Perm		
Protected Phases	4	4		8	8			2	8		6	
Permitted Phases							2		2		6	
Total Split (s)	20.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	20.0	20.0	20.0	0.0
Act Effct Green (s)	7.1	7.1		12.1	12.1		14.4	14.4	33.5	14.4	14.4	
Actuated g/C Ratio	0.16	0.16		0.29	0.29		0.35	0.35	0.81	0.35	0.35	
v/c Ratio	0.01	0.20		0.50	0.48		0.16	0.67	0.39	0.60	0.19	
Control Delay	18.7	20.6		18.1	17.3		13.9	21.6	1.3	36.4	13.2	
Queue Delay	0.0	0.0		0.7	0.6		0.0	0.0	0.0	0.0	0.0	
Total Delay	18.7	20.6		18.8	18.0		13.9	21.6	1.3	36.4	13.2	
LOS	B	C		B	B		B	C	A	D	B	
Approach Delay		20.5			18.4			10.5			23.5	
Approach LOS		C			B			B			C	

Intersection Summary

Cycle Length: 60

Actuated Cycle Length: 41.2

Control Type: Actuated-Uncoordinated





Maximum v/c Ratio: 0.67

Intersection Signal Delay: 14.6

Intersection LOS: B



















Analysis Period (min) 15

Splits and Phases: 18: I-5 SB & Old Road

 ø2	 ø4	 ø8
20 s	20 s	20 s
 ø6		
20 s		

Lanes, Volumes, Timings
23: Lake Hughes & I-5 NB

2030 PM Peak Hour w/Northlake Phase 1
9/26/2006

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Satd. Flow (prot)	1719	3438	0	0	3406	1524	1703	1524	0	0	0	0
Flt Permitted	0.950						0.950					
Satd. Flow (perm)	1719	3438	0	0	3406	1524	1703	1524	0	0	0	0
Satd. Flow (RTOR)						444		222				
Volume (vph)	189	599	0	0	868	444	478	0	683	0	0	0
Lane Group Flow (vph)	189	599	0	0	868	444	478	683	0	0	0	0
Turn Type	Prot					Perm	Prot					
Protected Phases	7	4			8		5	2				
Permitted Phases						8						
Total Split (s)	11.0	31.0	0.0	0.0	20.0	20.0	24.0	24.0	0.0	0.0	0.0	0.0
Act Effct Green (s)	7.0	27.0			16.0	16.0	20.0	20.0				
Actuated g/C Ratio	0.13	0.49			0.29	0.29	0.36	0.36				
v/c Ratio	0.86	0.36			0.88	0.59	0.77	0.98				
Control Delay	62.4	9.4			31.2	5.6	26.5	45.8				
Queue Delay	0.0	0.0			0.0	0.0	0.7	3.1				
Total Delay	62.4	9.4			31.2	5.6	27.1	48.9				
LOS	E	A			C	A	C	D				
Approach Delay		22.1			22.6			39.9				
Approach LOS		C			C			D				

Intersection Summary

Cycle Length: 55

Actuated Cycle Length: 55

Control Type: Actuated-Uncoordinated






Maximum v/c Ratio: 0.98

Intersection Signal Delay: 28.6

Intersection LOS: C

Analysis Period (min) 15

Splits and Phases: 23: Lake Hughes & I-5 NB

	
ø2	ø4
24 s	31 s
	
ø5	ø7
24 s	11 s
	
	ø8
	20 s